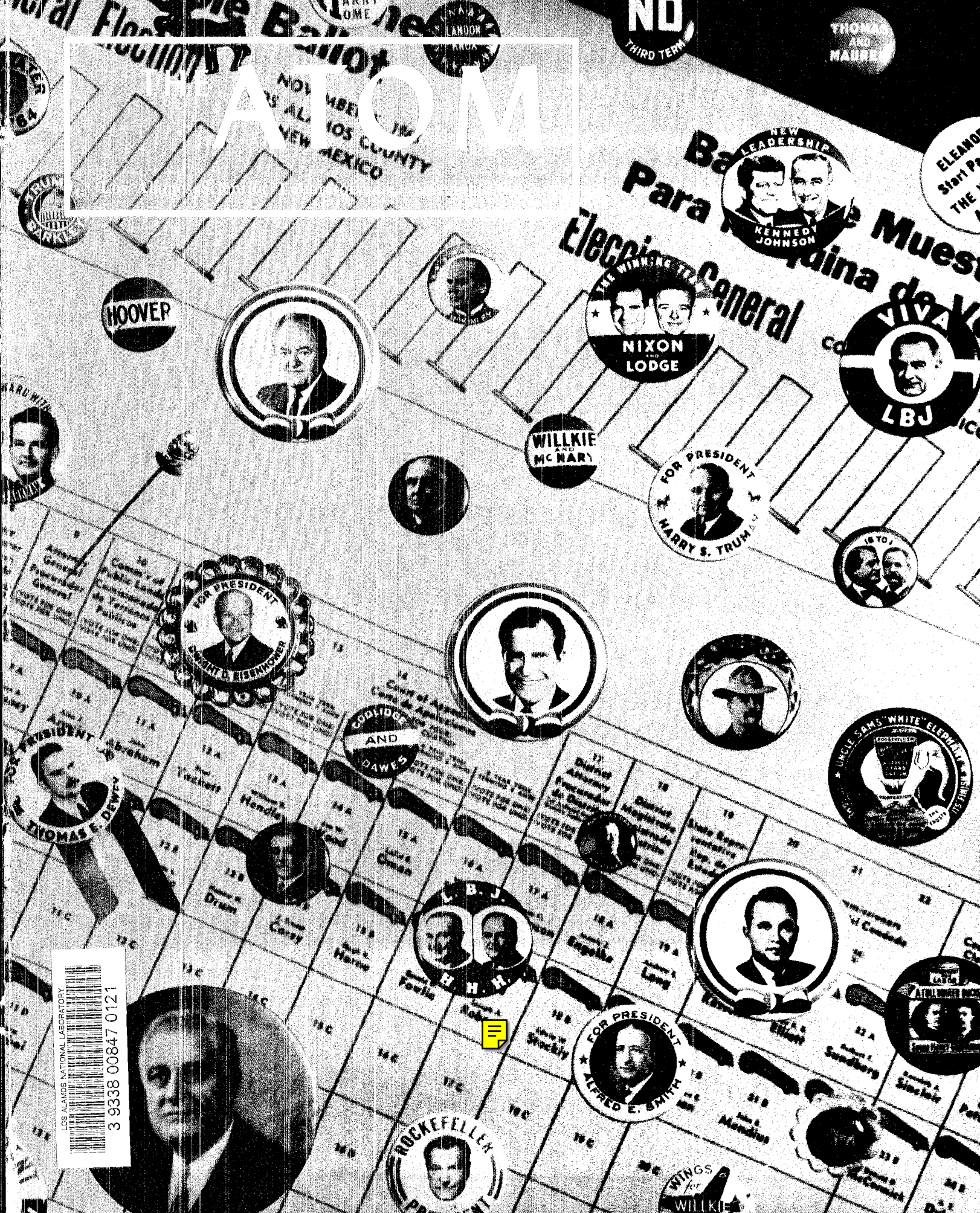
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FOR PRESIDENT ALFRED E. SMITH
ROCKEFELLER
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LANDON
THOMAS AND MAURER
NEW LEADERSHIP
UNCLE SAM'S "WHITE" ELEPHANTS
LOS ALAMOS NATIONAL LABORATORY
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THE ATOM

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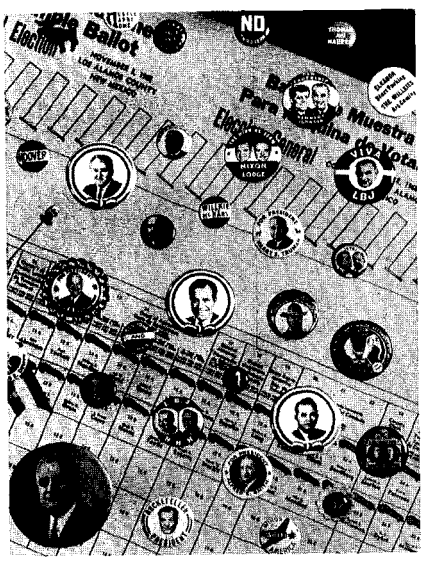
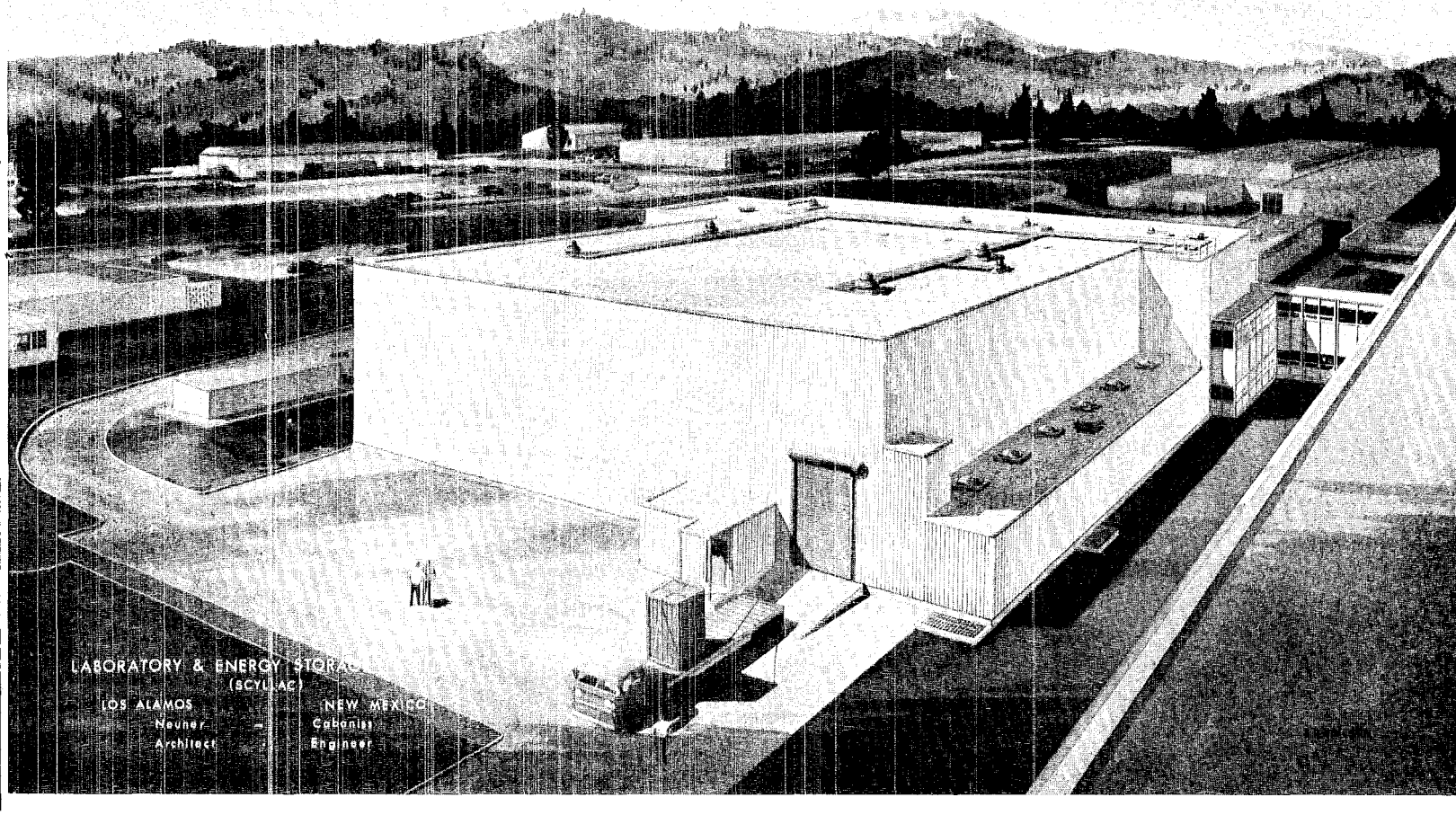


COVER:

L. M. (Marty) Holland, H-4 staff member, and his wife, Phyllis, have been collecting election-campaign buttons for about four years. They now have more than 300 dating back to 1832 when Andrew Jackson was running for President. The Hollands graciously allowed "The Atom" to borrow a few buttons long enough for Photographer Bill Jack Rodgers to record them on film and make the photo for this month's cover. The Los Alamos County Sample Ballot was furnished by The Valiant Company, Albuquerque.



In this architect's conception of the Laboratory and Energy Storage Facility for Scyllac, the South Mesa Cafeteria is at left and the west wing of the Administration building is at right.

Before Christmas Construction Will Begin On

A Home for Scyllac

Construction is expected to begin before Christmas on the Laboratory and Energy Storage Facility for Scyllac, the next step on the road to achieving the controlled release of thermonuclear (fusion) energy for peaceful purposes, at the Los Alamos Scientific Laboratory. Bid opening on the 120'x120' metal building is scheduled for Nov. 7 and construction should be completed by March of 1970, according to P-16 Group Leader Ed Kemp.

Kemp's group and Eng-7 have worked together on the engineering and development of the facility and capacitor bank which will be installed after the building is completed. The structure will be added onto the west side of the Administration building and will have four stories, including one underground. In addition to the experimental Scyllac device and power supply, it will also contain support laboratories, shops and 36 offices.

Of the $8.5 million recently appropriated by

continued on next page

. . . Scyllac

continued from preceding page

Congress, approximately $2 million is to be used for construction of the building and about $6.5 million for the 15-million-joule capacitor bank. The Scyllac device will cost about $1.1 million and will be funded from LASL's operation budget over a three-year period.

Kemp noted that $5,350,000 has thus far been received by the Laboratory. "With that we can buy the building and approximately half of the capacitor bank. We won't be able to buy all of the components we need until we receive the rest of the funds in FY 1970."

Since 1965 when physics experiments on Scylla IV were completed by Fred Ribe's Group P-15, scientists have been refining measurements of data collected, working to improve the reliability of components and have started investigations on how to build Scyllac. An aid to the effort will be the $200,000 High Voltage Test Facility which the Laboratory's engineering department was recently authorized to build south of Pajarito Road and east of the Van de Graaff building. It will be used by Eng-7 for testing capacitors, cables and other components before they are installed in the Scyllac system. The 50'x100' building is expected to be ready for occupancy in February.

P division groups involved in the fusion program at LASL have been increasing their staffs since 1965 to carry out the preliminary work for Scyllac. By 1973, when installation of the experimental device is scheduled to begin, the staffs will probably grow to a total of 75 persons, an increase of about 25 per cent.

The fusion program is known as Project Sherwood or Controlled Thermonuclear Research (CTR) and is being conducted primarily at four major centers in the United States—LASL, Lawrence Radiation Laboratory in Livermore, Calif., Oak Ridge National Laboratory in Tennessee and Princeton University.

The thermonuclear reaction, once its control can be accomplished, is expected to fulfill the world's future needs for energy, such as electricity and heat. Most, nearly all in fact, of this type of energy today comes from the burning of fossil fuel reserves such as coal, oil and gas. We are rapidly depleting these reserves and, without a new source, mankind would probably revert to his state in medieval times and, might starve for lack of energy-assisted food-production equipment and materials such as tractors and artificial fertilizers.

The energy derived from the fission of uranium, thorium and other heavy elements is now an accomplished fact, and over the next few decades, this process will take up the major load of providing electric power throughout the world. The reserves of uranium and thorium in the earth's outer crust are such that, if we use it wastefully, it will last well into the next 500 years, and much more than that if we use it prudently.

The widespread use, indeed, world reliance on fission for power is not without hazard however, for the unavoidable waste products are radioactive for a long period of time. Among the many radioactive elements—nickel, iron, calcium, strontium—which comprise these fission products, are some which are isotopically identical or similar to elements essential for life. Living things cannot distinguish between radioactive and non-radioactive foods. Though scarcely a hazard now, when fission power becomes widespread, mankind will have to be scrupulously careful in his housekeeping with fission products, or he may seriously poison the whole planet.

There are, however, still larger reserves of nuclear energy locked up in the light elements, such as hydrogen, heavy hydrogen (deuterium) and lithium. The energy is obtained by building up particularly stable heavier elements (especially helium) by assembling together the light ones. This is called a nuclear fusion reaction and is very hard to accomplish.

It turns out that the only way to get a profitable energy balance out of the nuclear fusion reaction is to heat deuterium and tritium to a stupendous temperature (100 million degrees) so that the random heat jostling of the nuclei is violent enough to bring about fusion reactions.

Nuclear reactions of this type have a special name—thermonuclear. They are the most frequent nuclear reactions in the universe, and are the source of energy which keeps the sun and stars shining. They are also the source of energy for the hydrogen or thermonuclear bomb. The fusion of heavy hydrogen would be an ideal source of energy for man if a thermonuclear reaction could be controlled in it. The main problem at this point is that it takes more energy to start the reaction than is produced by it. In a profitable reaction there would be no fission products, and deuterium, mixed with all the natural hydrogen of the world (in water) to the extent of one deu-

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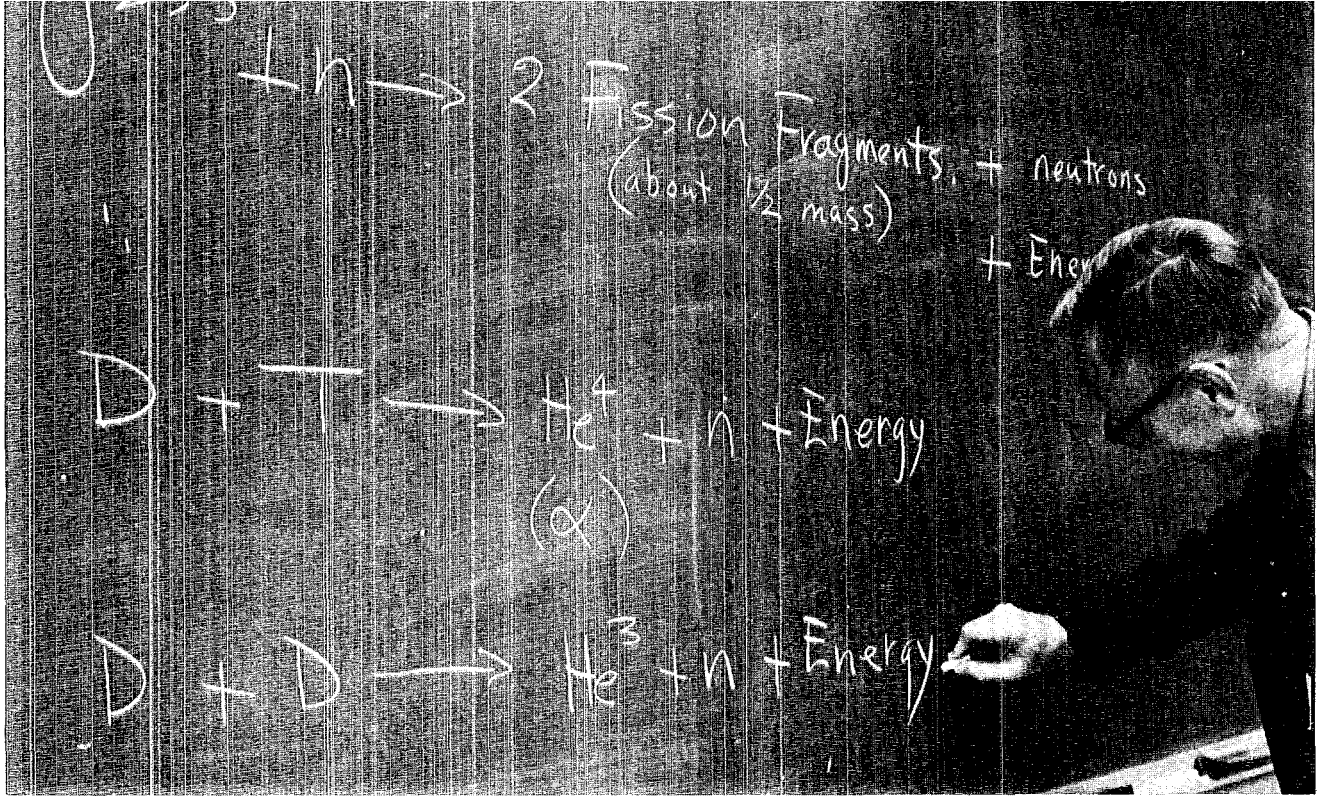
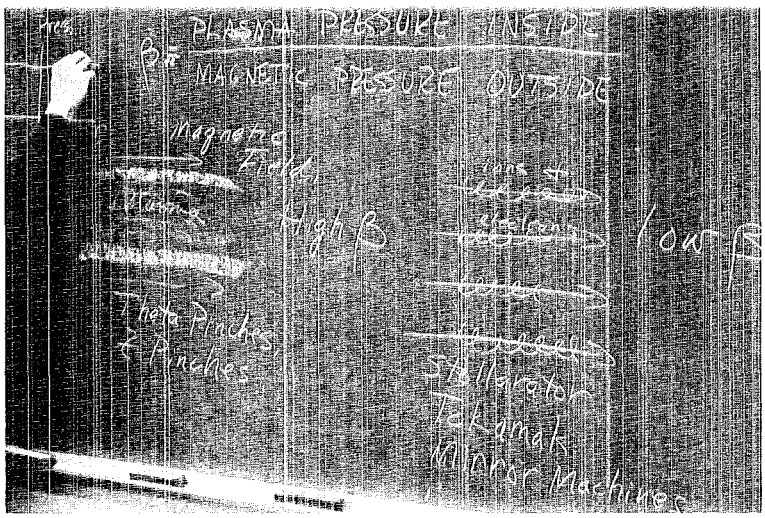
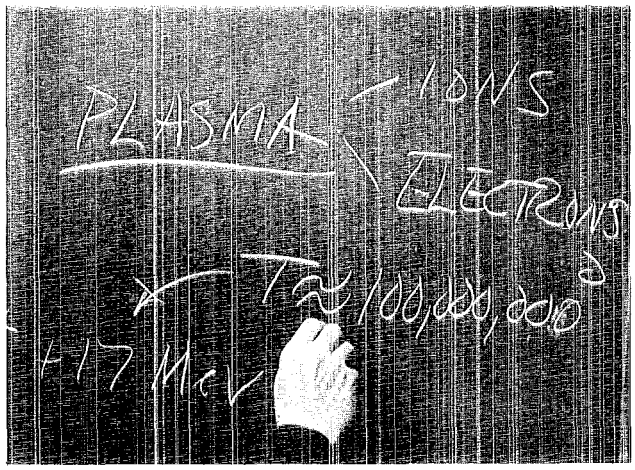
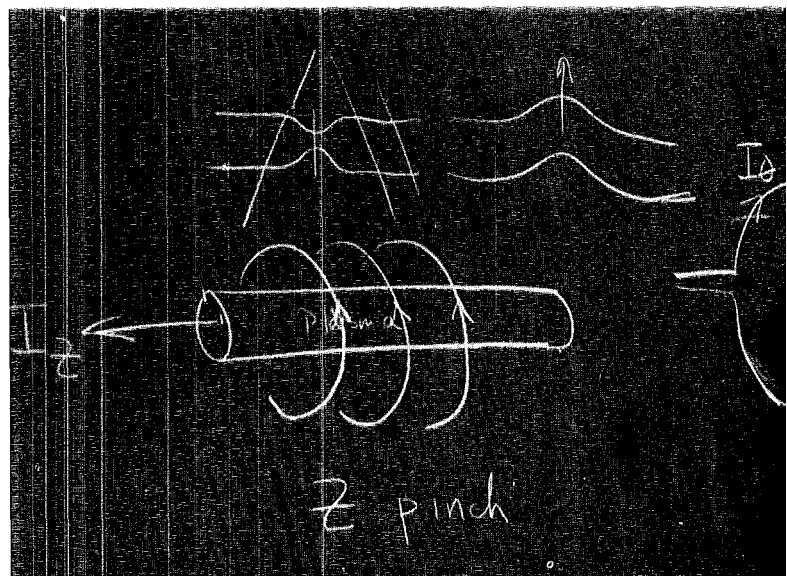
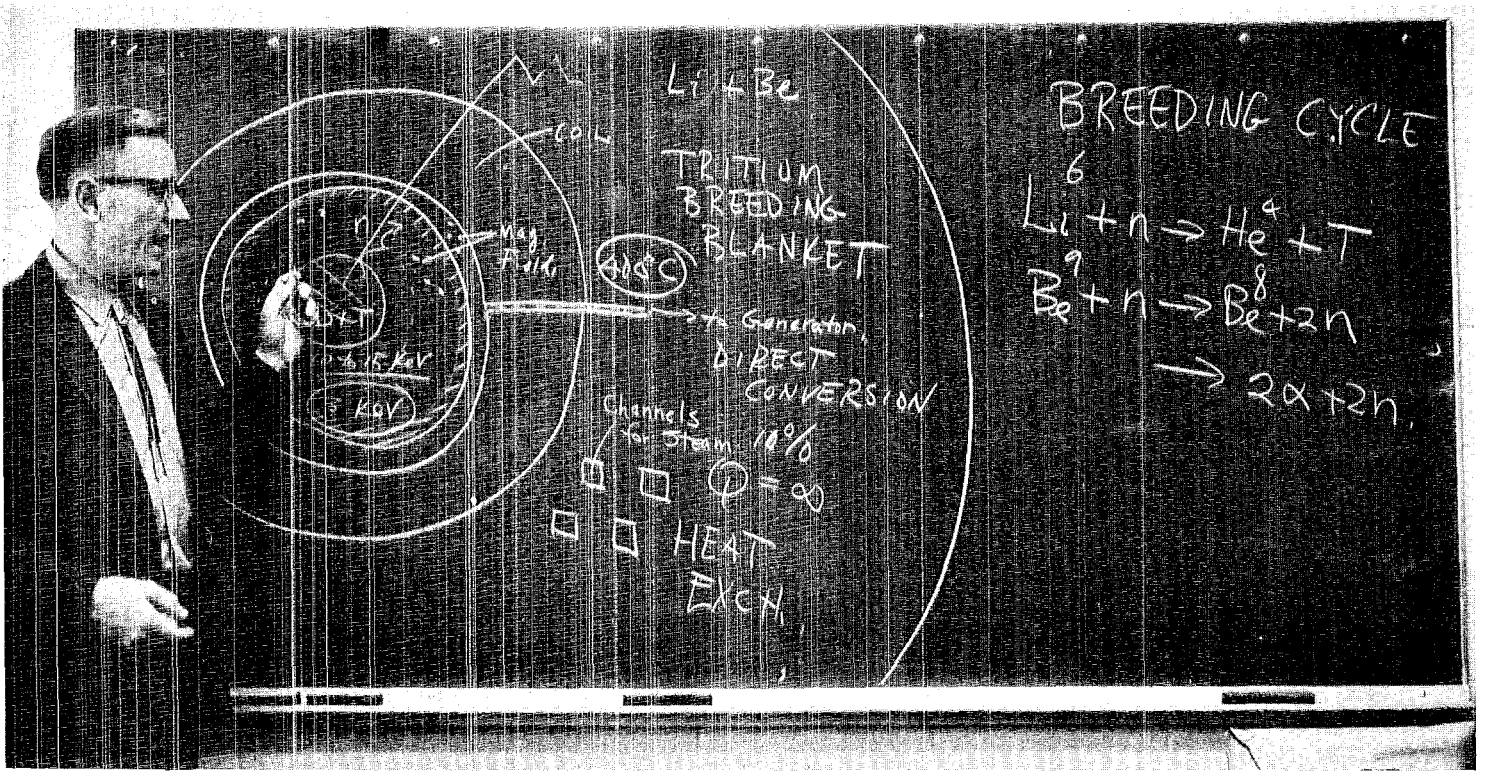


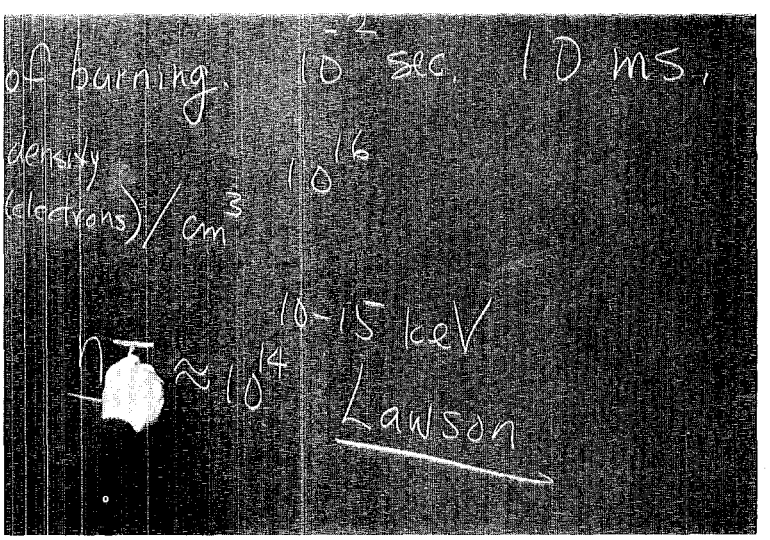


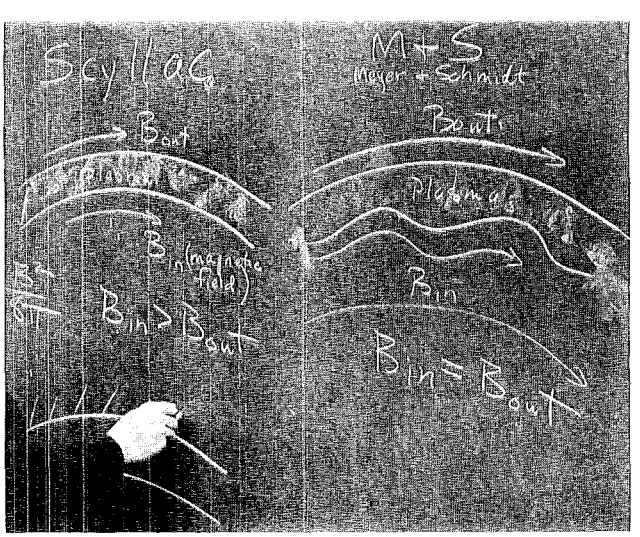
(Above): First key to understanding Project Sherwood is the difference between fission and fusion reactions. Fred Ribe, P-16 group leader, starts chalk talk with simplified formula for fission at top, and two possible fusion reactions at bottom. (Left): Los Alamos controlled thermonuclear research has been in the direction of producing a high density plasma with shorter confinement time as compared with other approaches using low density plasmas and longer confinement times listed at right. (Lower Left): A temperature of at least 100 million degrees K is required to make the DT reaction occur fast enough to be useful in a fusion reactor. (Below): Straight Z pinch is compared with theta pinch at right. Diagrams at top show two common instabilities—constriction and kink—which can occur in Z-pinched plasmas.











(Above): The ultimate goal of Project Sherwood and experiments like Scyllac is to design a power reactor utilizing the energy of fusion. Fred Ribe describes two schemes for drawing off the energy from a fusion reaction. One would use the heat in the breeding blanket to produce steam. The other would involve direct conversion of expanding plasma energy to electricity. (Right): Minimum break-even point for plasma in a fusion reactor is expressed by the Lawson criterion for a self-sustaining thermonuclear system. Present LASL experiments have achieved the required density. Time of confinement (T) will have to be improved by a factor of 500. (Bottom): Scyllac will utilize a magnetic field with ripples introduced into the inner field lines of the torus to hold the plasma away from the walls. Without these ripples, the inner field exerts a stronger pressure and forces the plasma to drift to the outside wall.

. . . Scyllac

continued from page 2

terium atom for every 6,000 light-hydrogen atoms, is very abundant, widespread, and its separation is relatively economical. The richness of this source of energy can be imagined when we calculate that the fusion of the deuterium extracted from one gallon of ordinary water (or sea water) yields as much energy as the chemical burning of 300 gallons of gasoline. Expressed differently, a couple of cubic miles of sea water contains enough deuterium to supply all of the energy used by man since his beginning on earth. The availability of such water is not a problem since there are 135 million square miles of it on the earth's surface.

It is clearly a rewarding task to attempt to bring this release of fusion energy about, and most of the industrially advanced nations of the world are working on it. Eminent physicists have described it as the most difficult but intriguing problem in applied physics.

Some of the pioneer work in Controlled Thermonuclear Research took place at Los Alamos. Its scientists achieved the first attested and proven controlled thermonuclear reaction in a magnetic-bottle theta-pinch compression apparatus called Scylla I. This was done in 1957, but, was not established as the real thing until about 1960. The thermonuclear reaction capability of the latest apparatus, Scylla IV, is quite healthy and easily detected. It yields about 100 watts for a few millionths of a second. It is, however, far away from producing a net output of power. For example, to net 100 watts of thermonuclear power, it takes nearly a billion times as much to acquire the necessary temperature and to maintain magnetic fields which contain the reaction.

One characteristic of all efforts to generate power from nuclear fusion is commonly agreed on; there is no hope of confining the high temperature deuterium in a vessel having walls of any material whatever. All known materials boil away long before temperatures of 50 million degrees are reached. So the vessel in which physicists endeavor to contain the hot plasma is made of a magnetic field, and called a magnetic bottle. At the temperatures required, the deuterium exists as a gas, which is called a plasma, consisting of equal numbers of deuterium nuclei and electrons.

The temperature and density necessary for a profitable reaction are nearly high enough now, but, the plasma must be held longer. It is hoped that this can be done by closing the ends of the Scylla theta-pinch magnetic bottle by making an endless toroidal theta pinch called "Scylla Closed" or Scyllac for short.

Physicists believe that the theta-pinch pulsed system constitutes a promising and interesting approach to controlled thermonuclear power. The basic limitation in large linear theta-pinch devices is the loss of plasma out of the ends of the coil. Reported times for plasma loss vary from two microseconds to eight microseconds depending on the particular device and operating conditions. In order to deal with the end-loss problem, it was proposed that Scyllac be constructed in toroidal geometry.

The purpose of Scyllac is to study the toroidal stabilization problem and to achieve longer confinement times. The elimination of end losses will allow concentration on the study of plasma stability and purity. There will be little duplication of effort within the Sherwood Project since other toroidal devices approaching the problems of equilibrium and containment have low "beta" and low density. Beta is the ratio of plasma pressure to confining magnetic field pressure and is a critical parameter in CTR devices.

The Scyllac device is expected to produce plasma with beta being greater than 0.5 and less than 1.0, whereas at the present time, the Stellerator at Princeton produces plasmas with beta being about 0.0001 and the Russian Tokamak device has beta at about 0.001. The theta-pinch system offers a unique opportunity to approach the basic problems of closed systems in an entirely different plasma environment. Scyllac will have plasma densities of 10^{16} to 10^{17} ions per cubic centimeter at temperatures in the vicinity of 50 million degrees centigrade.

Because of the toroidal geometry, additional magnetic coils will be required to produce a stabilizing magnetic field. Theoretical studies indicate that a rather complex coil geometry will be required to achieve stability. As a result, it is planned to construct a linear theta-pinch machine about 15 meters long prior to the construction of the toroidal device which will be 15 meters in circumference. The same energy storage capacitor bank will be used for both the linear device (Pre-Scyllac) and doughnut-shaped Scyllac.

Pre-Scyllac will be sectored and have provision

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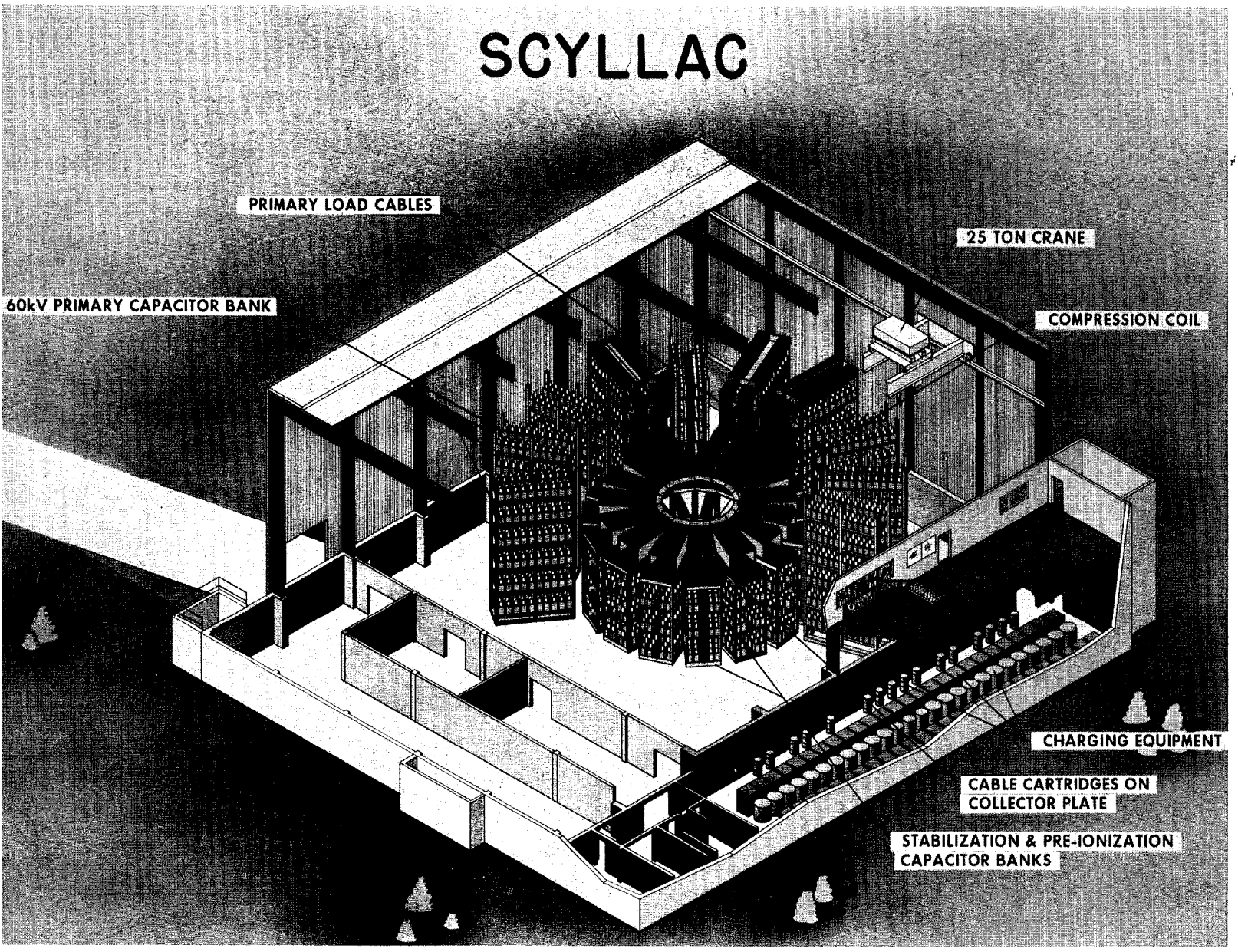

. . . *Scyllac*

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for installation of windings similar to those which will be required on the final toroidal device to produce bumpy stabilization fields.

A prototype engineering development device was recently completed at a cost of $400,000 and is presently being used in the development of the linear system. It will also be used in the development of the toroidal system.

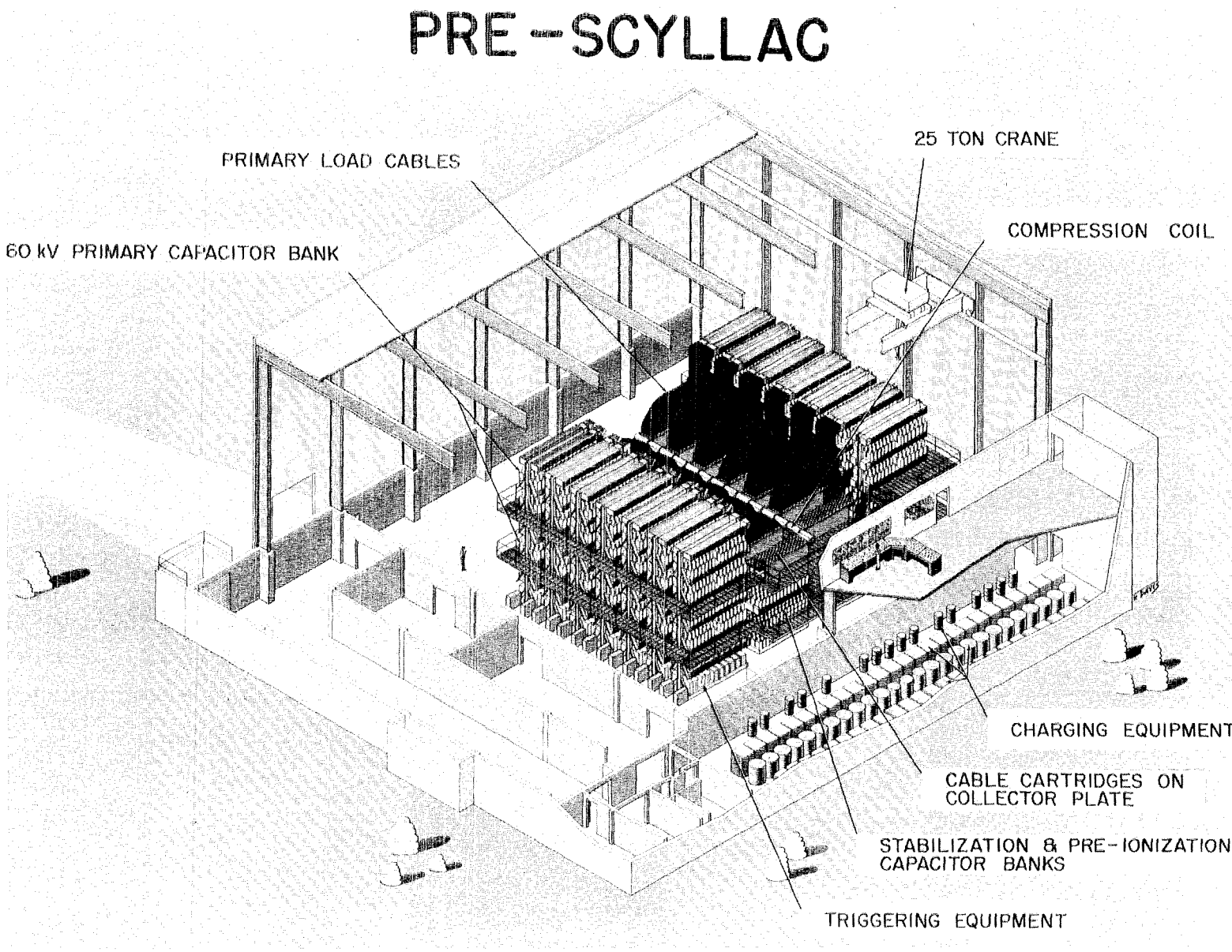
The length of the linear device will give scientists a better opportunity to determine if there is any radial diffusion of the plasma column so as to cause significant amounts of the plasma to be lost through the magnetic field. The study cannot be made in the present short Scylla IV machine because the end-loss limits the time available for

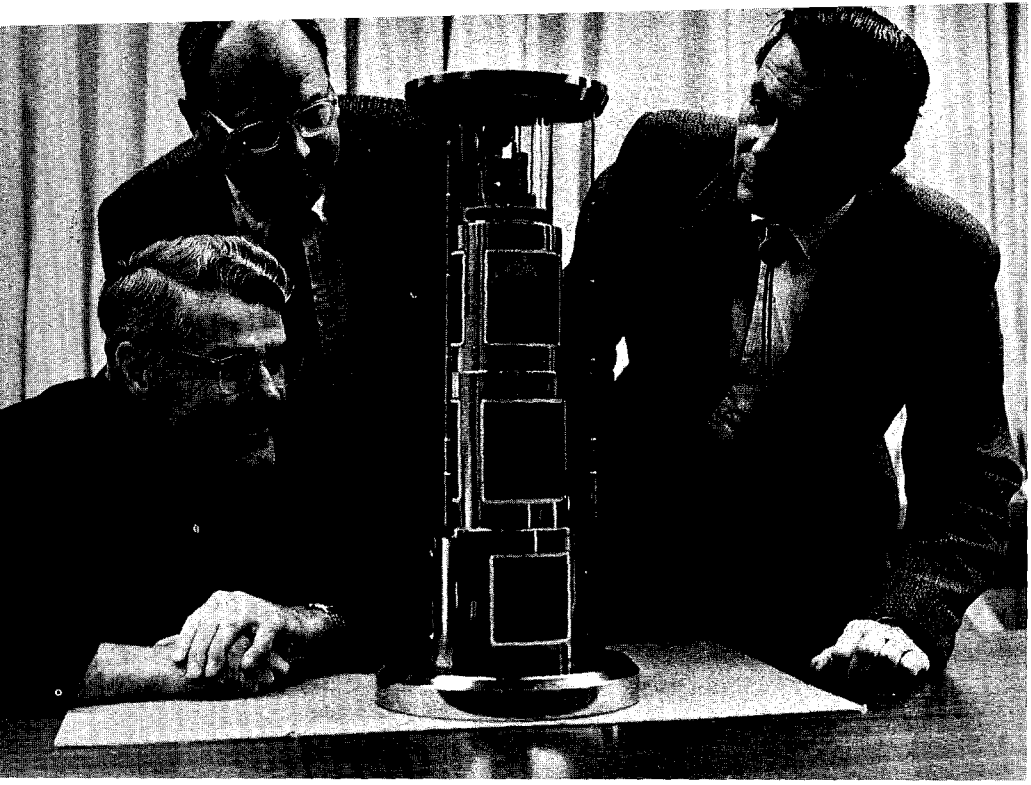
continued on next page

such observations. Experiments with different kinds of transverse magnetic fields that will be needed to provide the toroidal equilibrium in Scyllac will also be attempted.

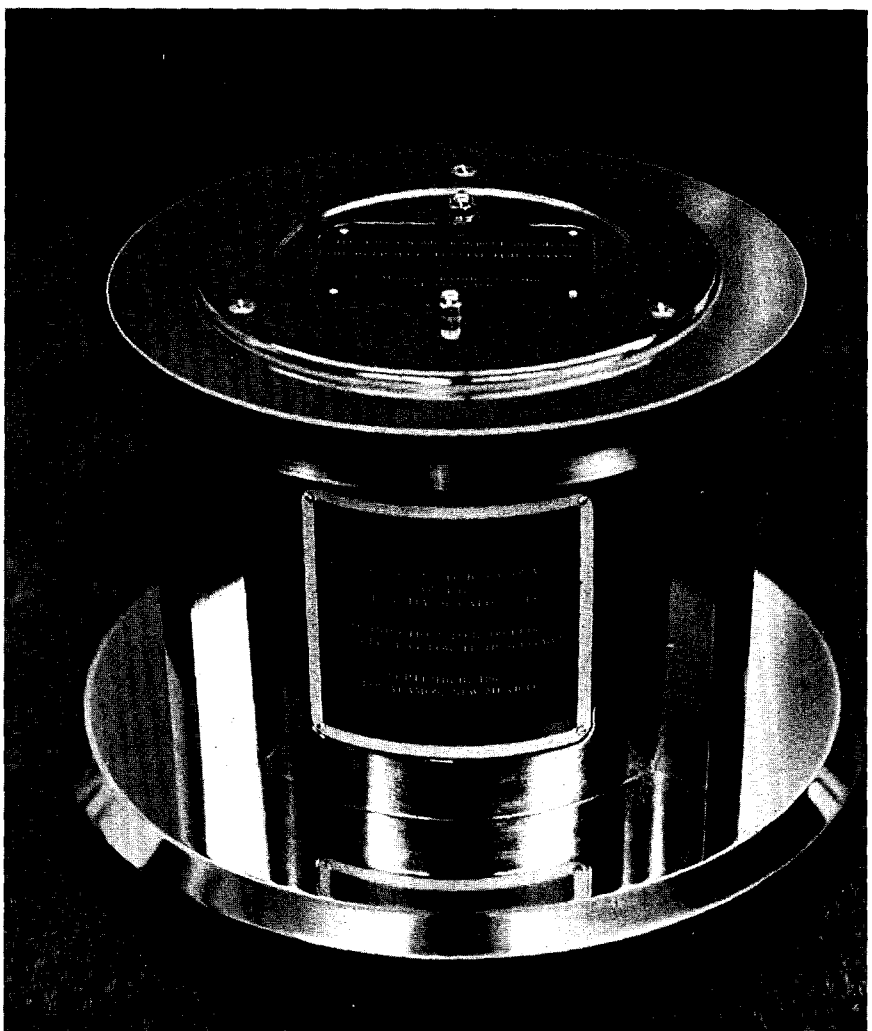
The Laboratory and Storage Facility will be the first major construction project for the CTR program at LASL in ten years. After it is completed and the capacitor bank installed, it will probably be 18 to 24 months before Pre-Scyllac is ready to go. "We'll push the button on Pre-Scyllac about the middle of 1971," said Ribe. "We'll run it for at least a year before beginning the installation of Scyllac."

"If Scyllac can hold a plasma upwards of 1/1,000 of a second (one millisecond) we will have proved everything we set out to do with this machine," Ribe said. "The next step would have to be a bigger machine, roughly five times bigger in plasma and machine diameter. It would have to be engineered so that power could be taken from it."





The three scientists who first liquified ^3He study the device that was later placed in a 100-year time column at Amarillo, Texas. The scientists are E. R. Grilly, E. F. Hammel, and S. G. Sydoriak. (Bottom): The device as it looks when it is collapsed.



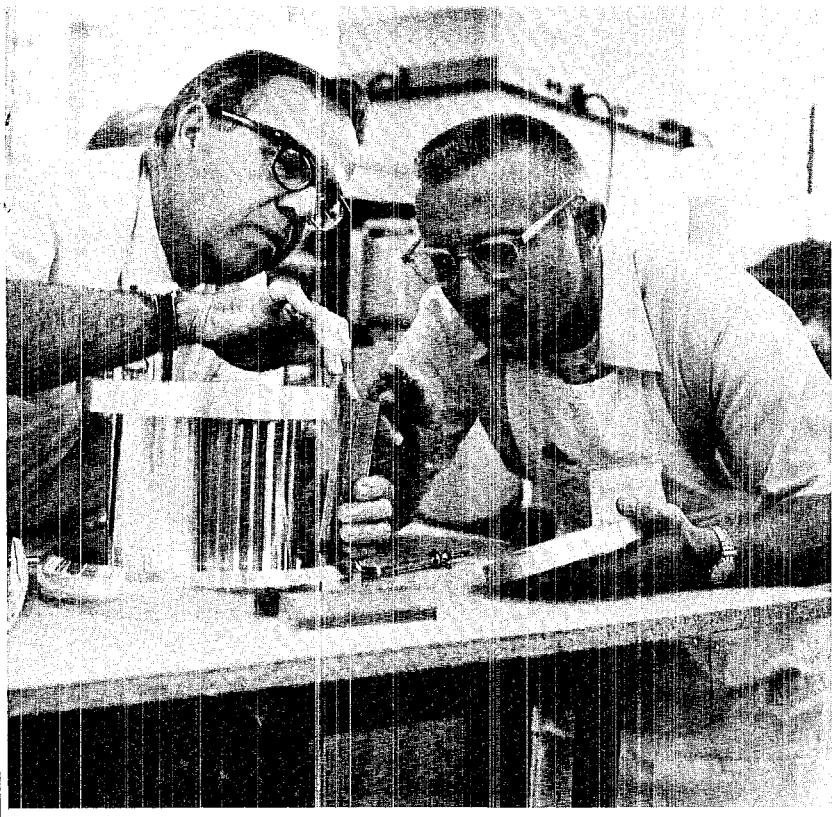
LASL Contributes to a Time Column

One hundred years from now a time column will be opened and a group of scientists will examine its contents. Not included in their findings will be newspapers telling of the riots in many of America's cities, currency such as the "copper sandwich" quarter, or other miscellaneous articles that are usually found in time columns and capsules in the cornerstones of civic buildings and some memorials.

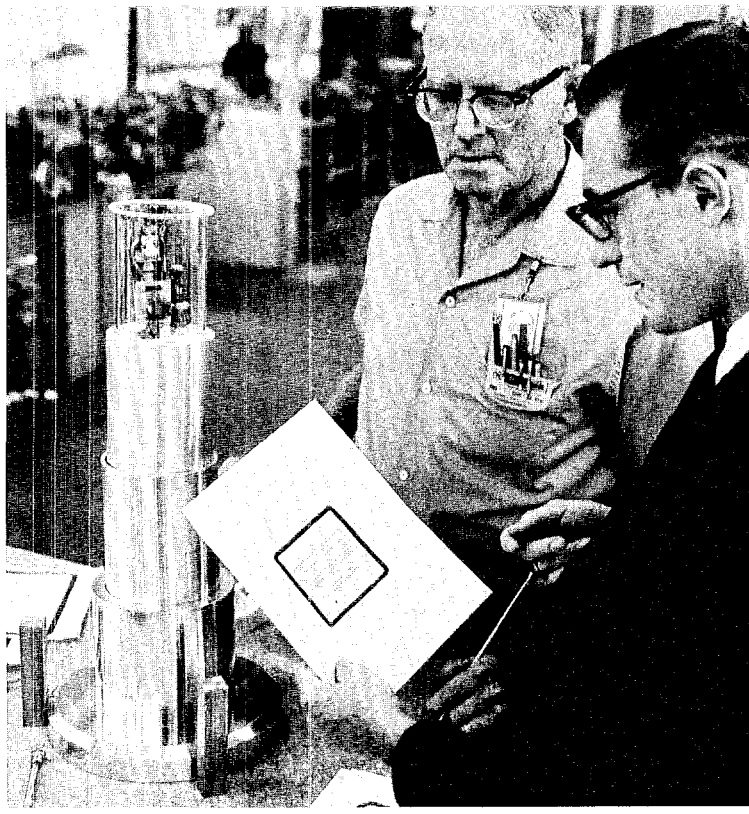
The contents of this column will all be related to helium. They are items collected by the U.S. Bureau of Mines from government and industrial laboratories which made significant contributions in the field of helium research.

Included in the Bureau's 100-year Helium Centennial Time Column will be an item from the Los Alamos Scientific Laboratory, a major contributor in the field. It is a cylindrically-shaped object, 10½ inches in diameter and about eight inches high. By lifting on the top, three sections telescope upward.

On the base of the exhibit are three metal plaques. On one, descriptive information about Los Alamos is etched and, on another, a brief history. The third lists areas of research in the helium field in which LASL led the world. Plaques on the next two sections give the titles of technical papers and the names of the authors whose discoveries contributed so much to the world's knowledge of helium at low temperatures. The papers date from the present back to 1948.



Bob Brashear, Pub-2, and Lawrence Walker, SD-1 model-shop machinist, work out a problem during the making of LASL's contribution to the U.S. Bureau of Mines 100-year Helium Centennial Time Column.



SD-1 Model-Shop Supervisor Merle Carter and Pub-2's Kent Bulloch go over the information that was later etched on metal plaques and mounted on three sections of the device. In the glass cylinder are two cryostats.

In all there are eight papers:

—"First Liquefaction of ^{3}He; Initial Measurements of the Vapor Pressure, Critical Point, and Density" by S. G. Sydoriak, E. R. Grilly, and E. F. Hammel.

—"Initial Measurements of Vapor and Phase Compositions of Liquid ^{3}He- ^{4}He Mixtures Leading to the First Prediction of a Liquid-Liquid Phase Separation at Low Temperatures" by H. S. Sommers and W. E. Keller.

—"Gas Thermometer Measurements Which Provided the Primary Basis of the T_{58} ^{4}He Vapor Pressure Scales of Temperatures" by W. E. Keller.

—"Measurement of the Energy-Momentum Relationship in Superfluid Helium by Neutron Scattering" by P. J. Bendt, E. C. Kerr, and J. L. Yarnell.

—"Development of the First Internationally Accepted ^{3}He Vapor Pressure Scales of Temperatures, the T_{62} Scale" by S. G. Sydoriak, T. R. Roberts, and R. H. Sherman.

—"Discovery of Multiple Solid Phases in ^{3}He and in ^{4}He" by A. F. Schuch, E. R. Grilly, and R. L. Mills.

—"First Definitive Study of Isothermal Flow of Liquid He II Through Narrow Cylindrical Channels" by E. F. Hammel and W. E. Keller.

—"Anomalous Melting Properties of ^{3}He and ^{4}He" by R. L. Mills, E. R. Grilly, and S. G. Sydoriak.

With the exception of H. S. Sommers and the late T. R. Roberts, all of the scientists are presently employed by LASL, and all but one of these are members of CMF-9. Yarnell is a member of P-2.

The base of the exhibit and the two sections immediately above it are of chromium-plated brass. The top section, however, is of glass. Inside the glass cylinder are models of two present-day cryostats (apparatuses for maintaining constant low temperatures).

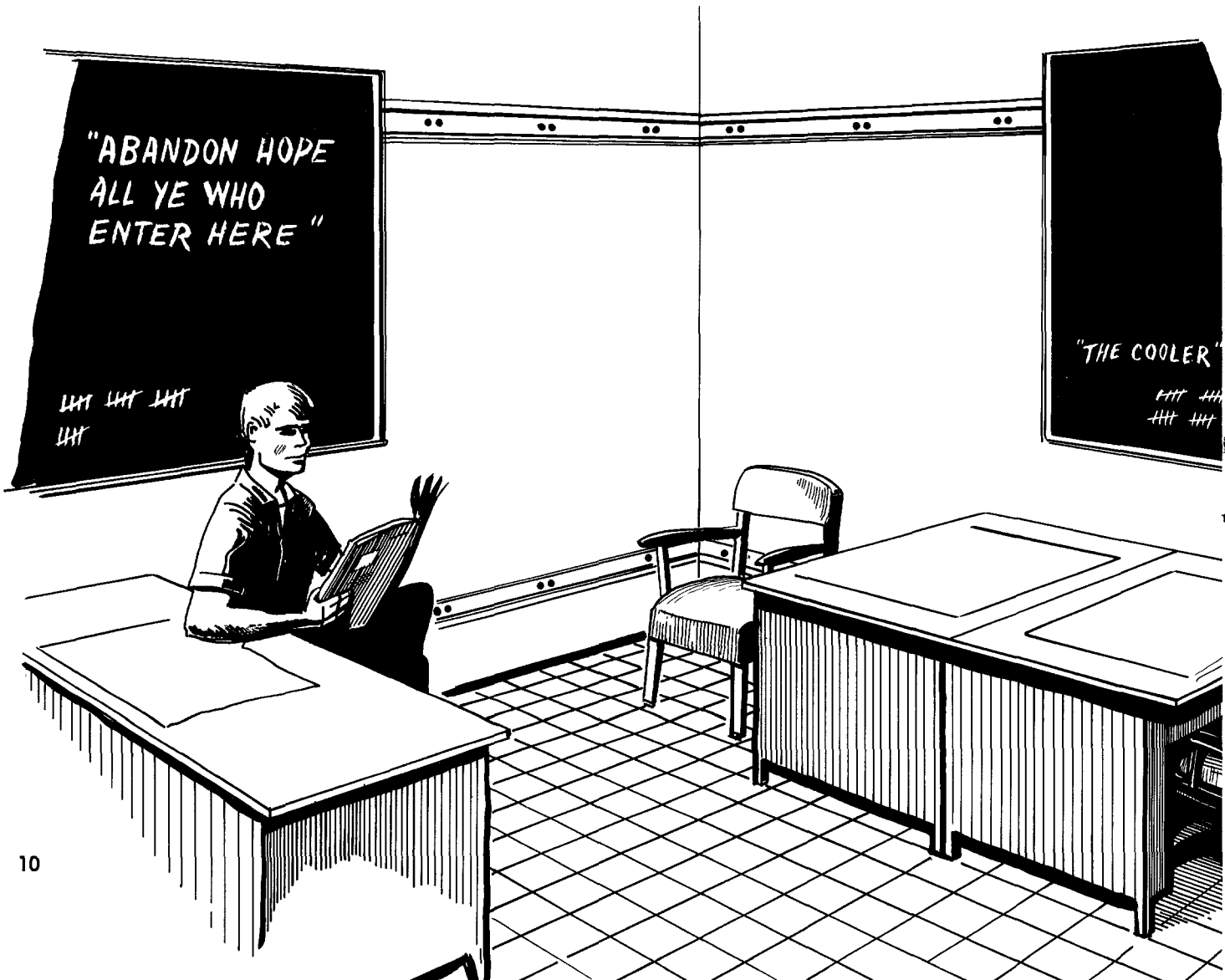
The time column exhibit is the brainchild of Robert Brashear, Pub-2. He noted that its preparation has taken the efforts of many people. The metal parts were fabricated in the SD-1 model shop, headed by Merle Carter, and the glass cylinder by the SD-3 glass shop under Arno Roensch. The photosensitized metal plaques were prepared by CMB-6 under the guidance of Jim Gore. Pub-2's Kent Bulloch was responsible for required line drawings.

The exhibit was shipped to the U.S. Bureau of Mines at Amarillo, Tex. during the last week of September where it is to be displayed along with many others before being entombed for 100 years.

"To my knowledge this is the Laboratory's first contribution to a time column," Brashear said.

A room at LASL, reserved for new hires who are not "cleared" to work in restricted areas, has been given many titles by its tenants. But Offically it is known as the . . .

OPEN SHOP



A neatly lettered message on a blackboard reads: "Abandon Hope All Ye Who Enter Here."

A series of chalk markings, five to a group, represents more than 100 days.

There are no windows.

These are the first things that catch the eye of the newcomer to Room 147 in the personnel building at Los Alamos Scientific Laboratory. This room is officially called "Open Shop," although its occupants, through the years, have coined other names.

A few of these are "The Cooler," "Purgatory," "The Leper Colony," Headquarters for the Unclean" and, more aptly, "That place where they keep the ones without clearances."

Employes who are hired without first receiving the coveted "Q" Clearance—whose base of operations will be in a restricted area—are usually assigned to the open shop to sweat it out.

In some cases the new hires are put to work in other non-restricted areas and never come to know the joys of open shop.

The normal population of this room is about three, although it frequently drops to a low of one leper.

A new hire's past is investigated by either the FBI or the Civil Service Commission. If it doesn't smack of something immoral, unpatriotic or laziness, the new hire can usually expect his clearance to come through in about two months—sometimes sooner, sometimes later.

When one guy has sweated it out for 90 days or so, he is not inclined to feel overjoyed when another guy makes it out in 50 days.

Then there is the much-appreciated character who wanders to the door with a cup of coffee in hand and says: "Well, don't feel too bad. I knew a guy who waited 11 months for his clearance."

This remark is usually met with dark looks and mumblings about "sadists in the personnel department."

A favorite pastime of the tenants of Room 147 is guessing the purpose of the 80 electrical outlets in the room. These outlets are placed in pairs about every two feet on three walls. One row is located near the floor and another about the height of a man's head. They were originally installed for museum displays.

Guesses have ranged from "It's a testing room for electrical chairs" to "The contractor had some outlets left over and placed them all in here."

The most popular theory is that they contain listening devices and are electronic "bugs." It's difficult to figure why 80 such devices would be needed. But, if you start with the FBI, CIA and AEC, and range down through the Screw-Worm Control Board, CCP and just "Big Brother," the 80 outlets can be explained.

One thing is certain. There are no foreign agents listening, because these lowly ones in purgatory could know nothing that someone else would want to know.

Occasionally a "graduate" of open shop comes back for a visit (and to gloat). He is usually asked: "Heard any good secrets lately?" The answer is usually a bewildered: "Heck no! I haven't been told anything I couldn't tell my wife!"

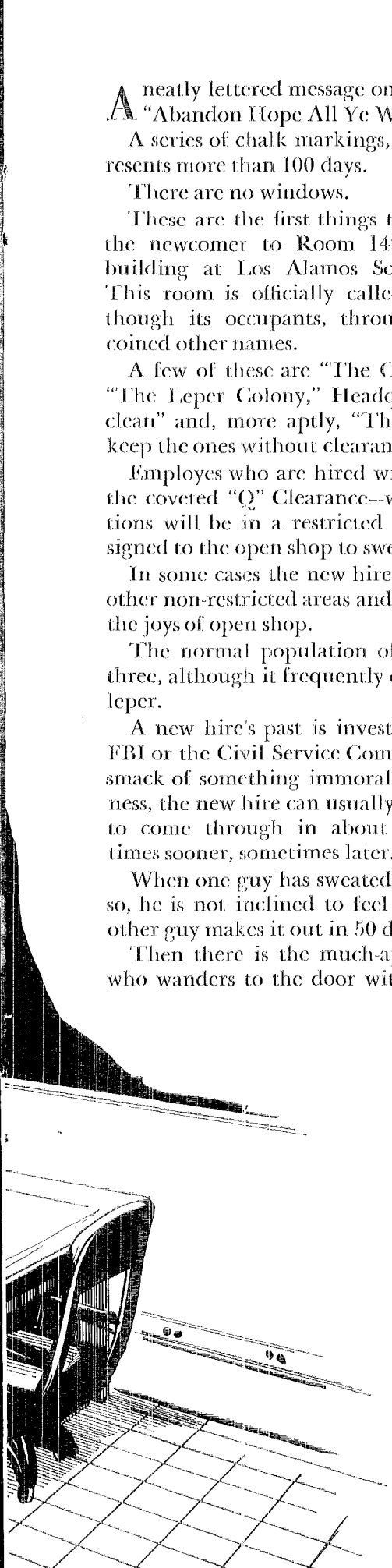
And as anyone who has ever attended a security lecture knows, you are not supposed to talk to your wife about anything at the Laboratory except your salary. Some people wish this was classified too.

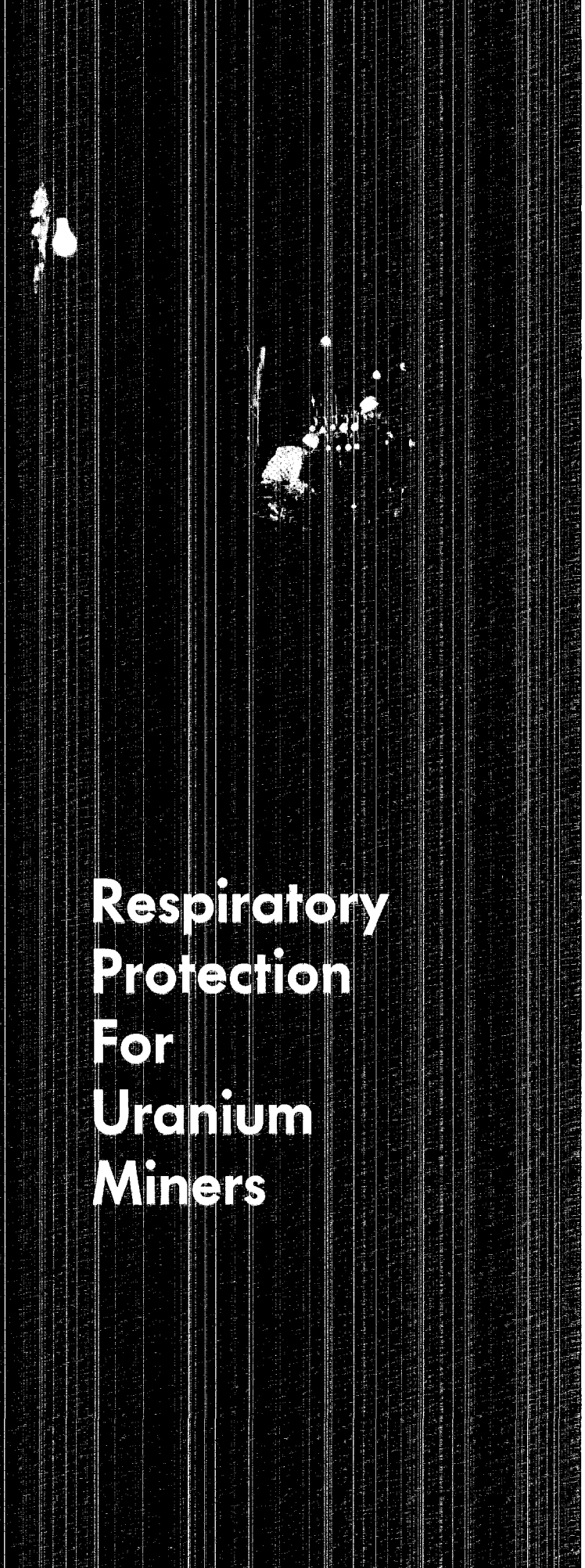
A prime topic of conversation among the lepers is the progress of the background investigations. One occupant reported that all kinds of wild rumors were floating around his old neighborhood after an investigator started questioning residents.

One back-fence gossip spread the word, the investigation was in connection with evasion of income taxes; and another said: "I *knew* little Johnny would never amount to much."

However, just when one of the unclean begins to wonder if his past was spicier than he thought, a personnel representative speaks those four beautiful words: "Your clearance is in." And open shop is forgotten in the rush to the badge office.

(Note to the investigators delving into my past: If my clearance isn't in by the time you read this; I was only kidding fellas.)





Respiratory Protection For Uranium Miners

By Ken Johnson

Although conditions in uranium mines have been improved appreciably since the 1940s and 1950s when the industry began on a large scale in the United States, existing radiation levels may still be a problem, according to studies conducted by the U.S. Public Health Service together with several states. In the wake of these studies, New Mexico, one of the youngest states in uranium mining, but by far the largest producer, began a joint program with the Los Alamos Scientific Laboratory, aimed at providing miners with effective respiratory protection against the hazard —minute airborne particles—commonly known in scientific and mining circles as radon daughters.

The studies had disclosed that cases of lung cancer have been discovered among some of this country's earliest uranium miners who worked for several years under conditions that were virtually uncontrolled. Most of them have been from Colorado where the industry had its beginning in the United States in small, isolated mines. Many of the mines were "family affairs" in which ventilation was almost non-existent.

It has been known for generations that miners who worked for several years underground developed pulmonary disease, although it was not until 1879 that the disease was first recognized as malignant. The nature of this malignancy was not certain until 1921 when the disease was recognized as lung cancer. Autopsy studies of miners from Jachymov, Czechoslovakia, dying in 1929 and 1930, disclosed that approximately 50 per cent had lung cancer, making clear for the first time the identity of the disease suffered by the Jachymov miners and others in Schneeburg, Austria.

Recognition of radiation-induced lung cancer has only been recent. In the 1920s it was suggested that airborne radon, a noble gas, might be important in the cause of pulmonary disease among the Schneeburg miners. In the 1930s it was thought that radon in the mine atmosphere was the most probable cause of the tumors. Finally, in 1951 Dr. William Bale of the University of Rochester pointed out that the major portion of the radiation to the lungs comes not from radon, but, from the daughter products which are deposited in the lungs.

Bale's discovery came three years after uranium exploration in the United States began in earnest. In 1948, the Atomic Energy Commission launched an intensive program aided by the U.S. Geological

Survey, and at the same time established incentives for exploration by private prospectors and mining interests. The program hit its peak in 1953-55 and then in 1956, tapered off sharply. By that time private exploration had gained full momentum.

When uranium mining began in New Mexico in 1954, 90 per cent of the mines were owned by large corporations which could better afford ventilation equipment for the protection of their workmen. For this reason the problem is not likely to be as hard felt as it has been in Colorado. The state's concern, however, coupled with an existing cooperative relationship with LASL, sparked the joint program currently under way.

Fortunately, when the venture began in May of 1967, there were some known factors on which it could be based. Edwin C. Hyatt, H-5 alternate group leader, who is directing the Laboratory's end of the program, explained that the properties of radon daughters were known at the outset. They occur in all types of ore mines, but in higher concentrations where uranium is produced because they are a third generation of decay products that begins with uranium. Uranium disintegrates to form radium whose decay product is a noble gas called radon. Radon decays into radon daughters, particles which may exist in that state in the mine air, but are more likely to attach themselves to sub-micron aerosols (less than 1/25,000 of an inch in diameter) such as dust, diesel fumes, oil mists and water droplets.

The half-mask respirator—one that covers the mouth and nose—was selected as the most practical for use in the mines because it is compact and lightweight. Laboratory hygienists knew from many years of experience that this type of mask was, at best, 95 per cent efficient when expertly fitted. Five per cent leakage around the edges of the mask can be expected because human faces come in many shapes and sizes and some have extreme or unusual contours making a perfect mask-to-face gastight seal impossible. Changes in facial expression, such as from a relaxed state to a smile, will also break the seal and cause leakage around the edges.

Consequently, realizing that the program's goal could not be a respirator that would be 100 per cent efficient against radon-daughter concentrations, Hyatt and Darell Bevis, senior industrial hygiene engineering technician, proposed performance criteria that would require the overall respirator to be at least 90 per cent efficient. This meant that the efficiency of the mechanical particulate filter of the respirator would have to be at least 95 per cent.

The filter was the stumbling block of the program. No one had ever tried to filter out radon daughters before, with the exception of a brief experiment by the Laboratory in 1964. "At that time," Hyatt recalled, "we were trying to see if nuisance-dust mask-filters would stop radon daughters." This is a simple cloth, paper or fiber facepiece which covers the nose and mouth. They are sometimes used by the farmer to keep field dust out of his nose and mouth while harvesting or plowing, or by road crews for the same type of protection against road dust. As it turned out the filters were not effective against radon daughters. If they had been, they would have been just the ticket for miners because they are not cumbersome and are of the disposable type.

In addition to the efficiency factor, the filter would have to permit easy breathing. It also had to be one that would not plug up during the workday under the worst of conditions.

Many filters manufactured in the United States and some foreign countries have been tested in various canisters and masks in order that all variables could be considered, not only in the laboratory, but in the mines as well. Since 60 per cent of the nation's uranium mining is done in New Mexico, finding mines representative of a variety of conditions was not a difficult task. Hyatt and Bevis, with the help of Ed Kauffman, and more recently Bob Canard, of the Occupational-Radiological Section of the New Mexico Health and Social Services Department, selected and tested respirators in five mines in the Lake Ambrosia area near Grants. The mines have differences in relative humidity and some use diesel loading equipment while others do not.

Laboratory testing was recently supplemented by a machine manufactured in England. It generates and measures the concentration of sodium-chloride aerosols and has been used to simulate mine aerosols to test the efficiency of filters in this program. Prior to its use, dioctyl phthalate, an oily synthetic developed by the U.S. Army in World War II, was used as a laboratory aerosol by LASL and was the adopted standard of the Atomic Energy Commission and the U.S. Bureau of Mines. Hyatt said that the Bureau of Mines recently announced it was considering lead fumes as a lab aerosol in approving respirators for use against

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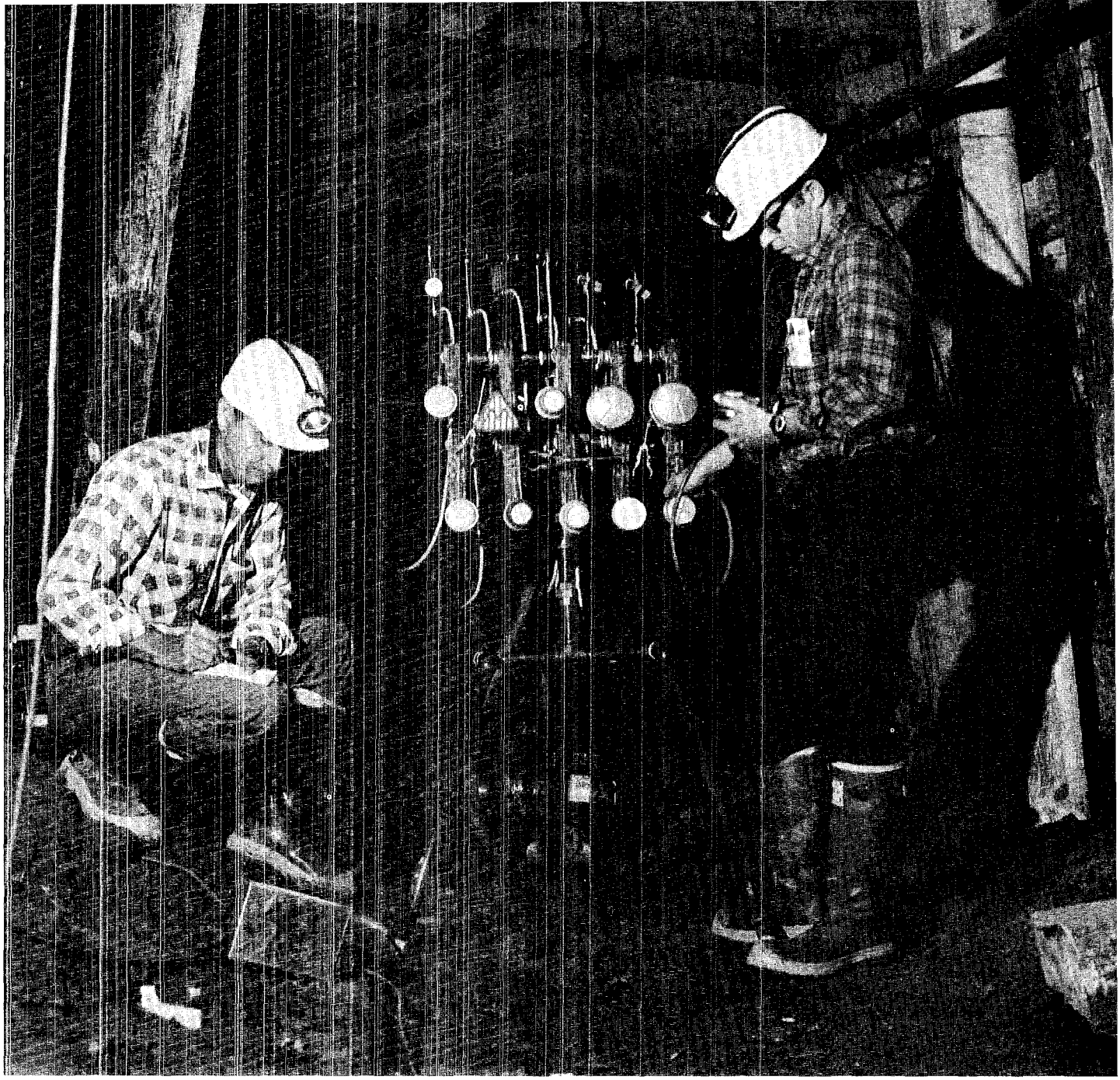

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radon daughters, after finding that the performance of the fumes correlated with data obtained in the joint LASL-New Mexico study. He noted that the capability of being able to test respirator products against laboratory aerosols is a valuable asset to the mining industry, not only in determining the performance of new products before issuing them to miners, but also to assure that quality control is being practiced by the manufacturers.

"At this point in the testing program we have found several filters that meet with our proposed performance criteria," Hyatt said. "We have tested 33 that range from 99 per cent efficient all the way down to 10 per cent. There are two types that appear to be ideal for use in the uranium mines. One, manufactured in the United States, consists of a fiberglass and cellulose mixture. The other, a resin-impregnated wool batt filter, is used in England and Australia."

Providing the mine worker with respiratory protection against radon daughters is one problem; getting him to wear it is another. "To the miner,

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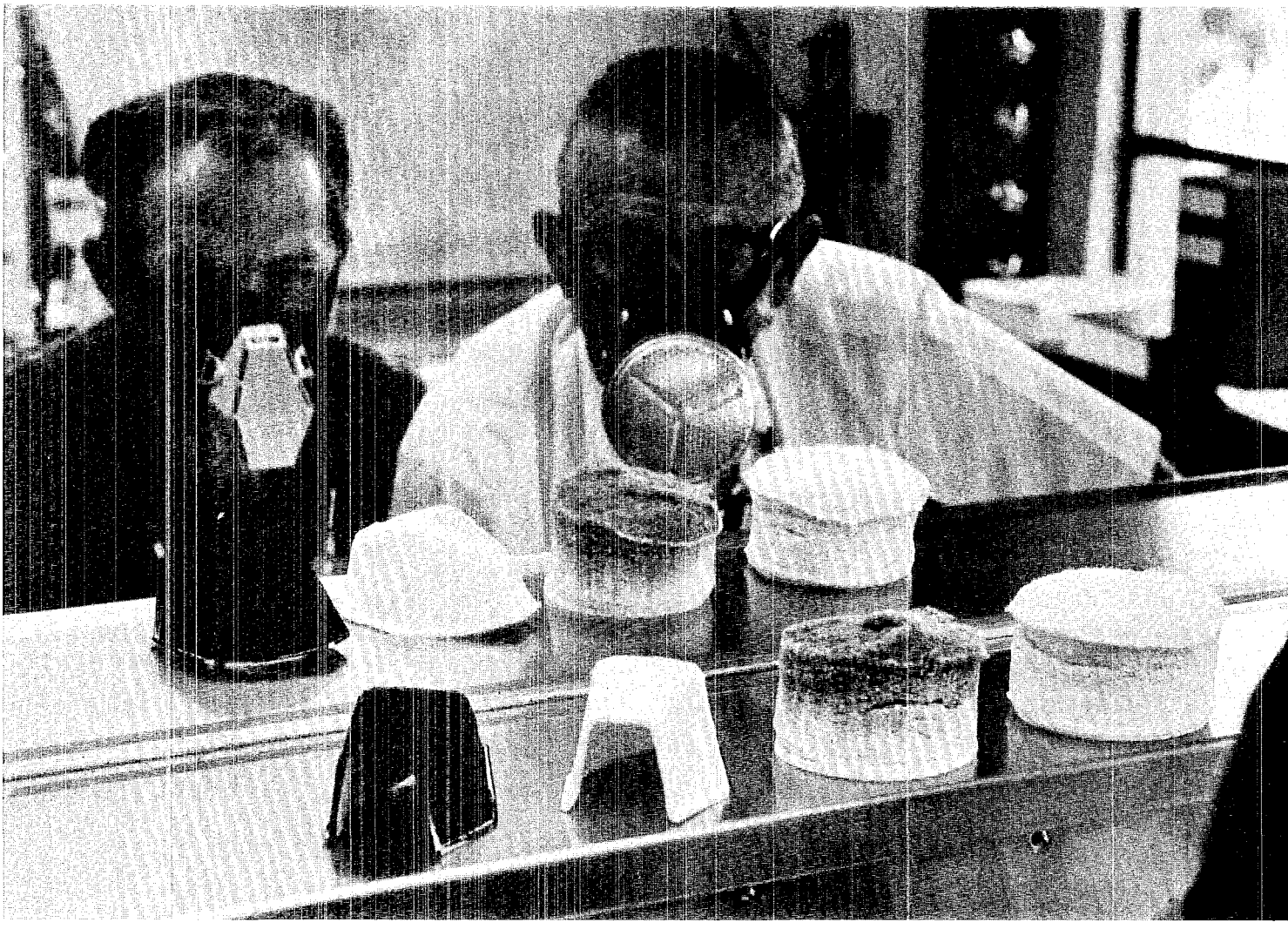
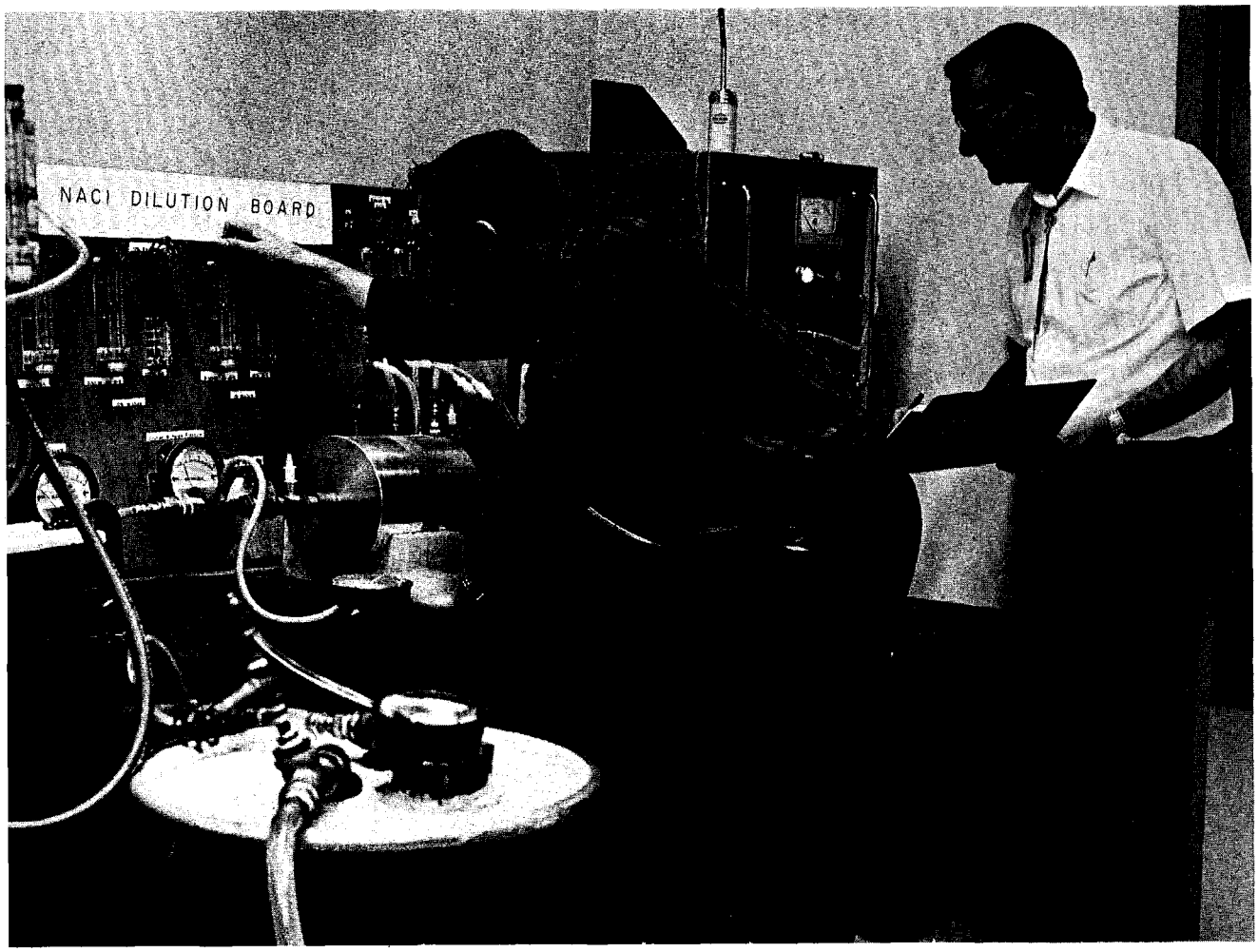
(Left): Special equipment for testing filters, 10 at a time, is used in a haulageway of a uranium mine by Ed Kauffman and Darell Bevis. (Right): Ed Hyatt and Bob Canard look at data sheets which show the performance of filters tested in the mine. (Bottom): Bevis and Hyatt model half-mask respirators. The filters at left and third from left have been tested against diesel fumes.





Testing the efficiency of filters against a sodium chloride aerosol on a machine made in England are Bevis and Hyatt.

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the respirator is an instrument of torture," Hyatt said. "He'll take it down the mine shaft with him, but he won't wear it." This is because respirators used by the miner in the past have been bulky; they have hampered his work movements, impaired his vision, been uncomfortable on his face and have made it hard for him to breathe and communicate easily. He is already burdened with safety equipment such as the hard hat, a miner's lamp and battery, safety glasses, steel-toed, knee-high, rubber boots and the tools of his trade. But, these items have become a part of him; he is comfortable with them and feels naked without them.

Hopefully the miner's objections will be overcome by the compact respirator being planned for him. Tied to an enforced respirator program he may learn to accept it as he has his other equipment.

The Los Alamos Scientific Laboratory has had a long and successful history in upgrading and "humanizing" respirators. In 1955, H-5 Group Leader Harry F. Schulte and Hyatt, in an effort to provide LASL scientists who were working with plutonium and other toxic materials with the best respirators available, began testing some which had previously been accepted on "faith." They fought and overcame the resistance of the manufacturers to come up with better and more sophisticated ones. Through their work they have influenced many beneficial changes in respirator products

and established themselves among the foremost authorities in the field. As a result, manufacturers seldom if ever market a new respirator product before having it evaluated at Los Alamos. "There are some manufacturers who would like to label their products with 'Approved by the Los Alamos Scientific Laboratory,'" Hyatt said, "but we do not 'approve' respirators; we simply test their performance."

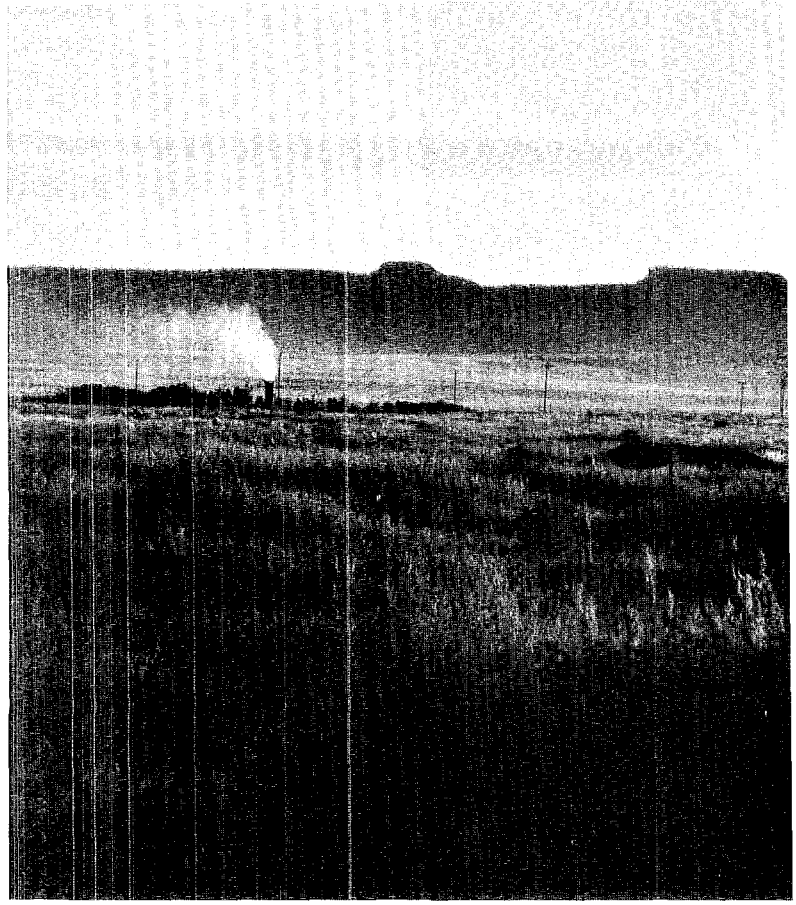
This is not just a "good will" contribution to industry or its consumers for it provides the Laboratory with first-hand benefits of an improved product when it comes out. Likewise the current testing program is not only beneficial to the mining industry but also to LASL in that it provides a practical proving ground for respirators and furthers its program of providing the best available for Laboratory employes.

The Laboratory has worked with the mining industry and related agencies many times in the last two decades. As early as 1950, health division personnel were consulted on radiation problems in uranium mills in Naturita and Grand Junction, Colo., and Monticello, Utah. They later examined mill workers from the same two states to determine their exposure to radium. In the early 1960s they helped calm a panicky Farmington, New Mexico, population which feared that its water supply had been contaminated by seepage from uranium tailings of a milling operation near Durango, Colo. They examined several members of the population for radium content, and after finding none, spoke at meetings in Farmington to assure the public they had nothing to fear from their water supply.

The Laboratory's health division has been of assistance in New Mexico since uranium mining began. New Mexico industrial hygiene engineers have been security-cleared so that occupational health equipment and personnel are readily accessible to help in solving some of the State's knotty problems in industry and mining.

Some work has been done at the occupational health laboratory toward finding a sorbent that will remove radon. The gas, not as much a hazard as its daughters, passes through all known filters and some remains in the respiratory tract where it decays to solid daughters.

Radon is naturally generated from deposits of radium in most rocks and soils and diffuses into the air continually. Diluted by air, however, it is of no consequence. But in a mine where ventilation is restricted, radon diffuses through every



Contaminants are exhausted from a ventilation pipe in the Lake Ambrosia mining area near Grants. (Bottom): A miner drills in a stope.

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crack, crevice and pore of the rock walls, ceiling and floors and is carried in by ground water.

Ventilation is considered to be the most effective protective measure against radon and its daughters. It reduces the concentrations of gases and aerosols in the haulageways, shafts and stopes by diluting and exhausting the contaminants to the surface.

Where the respirator will be of most help is in the new areas of the mine where ventilation is limited. In following the ore vein, the miners tunnel on an unpredictable course, exposing new surfaces and releasing new concentrations of radon which then forms its daughters in the mine air. The respirator will also provide protection to those who work on the installation of ventilation equipment in the new areas.

Prior to and during the time of the testing program being conducted jointly by the Los Alamos Scientific Laboratory and the State of New Mexico, several events occurred which did not alter the course of the program but did make it significant on a nationwide basis.

In April of 1967, Hyatt and four other experts in the respirator field were invited to Washington, D.C. to discuss the effectiveness of respirators in mining operations. At about the same time, the Atomic Energy Commission contracted with the Department of Radiology and Radiation Biology of Colorado State University to begin a testing program similar to the one in which the Laboratory was engaged. CSU began testing respirators the following August. "We have been working together closely," Hyatt said.

The most significant event occurred April 21, 1967, when the Joint Committee on Atomic Energy announced that a series of public hearings would be held on the subject of radiation exposure of uranium miners. The hearings, which began in May, took 11 days, spanning a four-month period.

The hearings can be said to have brought the problem to a head and instigated a number of research and development programs, which have gained momentum, to wipe out the hazard confronting the uranium miner.

Witnesses at the hearings included representatives of the Federal Radiation Council, the Atomic Energy Commission, the Departments of Health, Education and Welfare, Interior, and Labor, labor unions, mine operators, state regulatory groups, scientists specializing in various aspects of the problem, radiation protection experts, medical doctors, and two members of the President's cabinet—Secretary of Labor W. Willard Wirtz and Secretary of Health, Education and Welfare John W. Gardner.

A highlight of the top level hearings was a 12-member panel, whose membership was especially selected by the Subcommittee on Research, Development and Radiation, which conducted the hearings, in order to present the divergent viewpoints of the problem.

The hearings covered all aspects of the problem, aimed at an eventual and meaningful safety standard under which miners would be protected against excessive exposure to radon and its daughters. They disclosed certain discrepancies and misunderstandings associated with an epidemiological study conducted by the Public Health Service, and the Secretary of Health, Education and Welfare subsequently requested a review of the study, from which it was concluded that its projections of mortality from past and future experience in the mines could not be substantiated. The review contributed to understandings on which the Federal Radiation Council later agreed to a tolerance level of radiation exposure which was accepted by the President on July 27, 1967.

Other results of the hearings were summarized in a Joint Committee report: "Information generated during the hearing shed new light on several important facets of the miner exposure problem. Although there is still no positive evidence of the cumulative effects of exposure at levels of radiation as low as that embodied in the new standard, it is abundantly clear that to date the deaths due to lung cancer among uranium miners have been associated with exposure to excessively high levels of radon daughters which existed in the 1940s and 1950s, but which are no longer characteristic of the underground uranium mining operations. Epidemiological studies, both retro-

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Herman E. Roser Transfer is Effective Nov. 4

Herman E. Roser, manager of the Atomic Energy Commission's Los Alamos Area Office, will transfer to Commission Headquarters in Washington, D.C. as assistant director of the Division of Military Application effective Nov. 4.

Roser, a resident of Los Alamos for 20 years and manager of its AEC area office since Feb. 1967, said he will leave for Washington Oct. 29 or 30. His wife, Margaret, and daughter, Mary Elizabeth, will join him during the latter part of January, after the close of the first semester of school at Los Alamos, where Mary Elizabeth is a sophomore.

Roser will succeed David B. Anthony in the Washington position. Anthony was appointed assistant manager for operations at the Commission's Albuquerque Operations Office. Roser's successor has not been announced.

Roser came to Los Alamos in 1948 as a Zia Company administrative employe. He had previously worked in several federal government agencies, including the Office of War Assets Administration in Albuquerque.

He has taken an active part in community life and in the work of many service, civic and fraternal organizations. He has been president of the Los Alamos Kiwanis Club; a member of the Board of Trustees and president of the Los Alamos Medical Center, Inc.; treasurer of the Los Alamos Chapter of the American Red Cross; chairman of the Budget and Admissions Committee of the Los Alamos Community Chest; Worshipful Master of Pajarito Lodge No. 66, Ancient Free and Accepted Masons; and Worthy Patron of Los Alamos Chapter No. 63, Order of the Eastern Star. He is a member of the board of directors of the Los Alamos Chamber of Commerce, and a member of the executive board of the Kit Carson Council, Boy Scouts of America.

When the Los Alamos Planning Committee, appointed by the manager of Albuquerque Operations in 1962 to make recommendations concerning lines of future development for Los Alamos, was making its comprehensive studies, Roser served as vice-chairman of the Planning Committee's Task Group on Commercial Operations. He also served on the first Los Alamos County Planning Commission.

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spective and prospective, were judged to be the best available scientific basis for establishing the relationship between exposure to short-lived radon daughters and subsequent development of lung cancer.

"Shortcomings in our technology in such areas as mine ventilation, monitoring instruments, radon-daughter dosimetry and protective equipment pointed the way for an accelerated R. & D. (research and development) program now being implemented in accordance with an interagency plan formulated by the AEC, and the Departments of HEW, Labor and Interior. Testimony on research in sputum cytology (examination of epithelium cells in sputum) indicates that this technique shows promise of being dramatically effective in the early diagnosis of lung cancer. Testimony relating to pathological studies on human radiation exposure cases suggest the possible existence of a practical threshold level of exposure, below which the risk of inducing lung cancer would be negligible during the normal lifespan of the individuals exposed."

One of the most recent developments in the program is the "Proposed United States of America Standard Safety Guide for Respiratory Protection Against Radon Daughters," prepared by a 10-member subcommittee, sponsored by the Bureau of Mines. A section contained in the 21-page proposal, "Performance Criteria. Respirators for Protection Against Radon Daughters," are the criteria established by Hyatt and Bevis.

Hyatt, chairman of the subcommittee that prepared the proposed standard, said that it has been sent out on ballot and returned by agencies concerned. A meeting was held in Washington, D.C. in mid-October. Differences were resolved and the Standard was approved. It will be published in the next few months, Hyatt said.

short subjects

Captain Francesco Costagliola, a staff consultant to the Joint Committee on Atomic Energy on loan from the Navy, has been named an Atomic Energy Commissioner to fill a vacancy that expires June 30, 1969.

Costagliola is a veteran of World War II and Korea. He has an impressive background in nuclear weapons that began when the Navy was developing a broad nuclear weapons capability from 1952 to 1955. He served in the Atomic Energy Division of the Office of the Chief of Naval Operations as Chief of the Weapons Section, Research and Development Branch.

In 1959, he was assigned to the missile projects branch of the AEC, concerned with nuclear power for aerospace application. This was followed by two years as Chief of the Technical Division, staff of the Military Liaison Committee to the AEC.

In 1964, after a short tour of duty as Assistant Commander of the Naval Ordnance Laboratory, White Oak, Maryland, he became the principal military assistant to the Assistant to the Secretary of Defense, Atomic Energy, where he served until Aug., 1967. Since that time he has been a staff consultant.

Costagliola and a group of military and civilian officials, accompanying the AEC's Military Liason Committee, visited the Laboratory last month.

U.S. patents for inventions of four Los Alamos Scientific Laboratory employes and one former employe were recently released by the Atomic Energy Commission for public use.

They were for the Electrical Connector invented by **Donald M. Locke,** GMX-7; Cast Explosives Comprising Cyclotrimethylene Trinitramine and Nitrotoluenes by **C. L. Miller,** former employe of GMX-2; Particle Separator by **Mack J. Fulwyler,** H-4; Device for Forming Small Diameter Tubing by **George F. Erickson,** N-5; Castable Machine Tool Bit Composition of Boron Carbide and Nickel by **Haskell Sheinberg,** CMB-6.

First annual meeting of the recently formed International Metallographic Society, Inc. is slated to be held at the Denver Hilton Hotel Nov. 11-13.

The organization was founded this year by **J. H. Bender,** K-2, currently president; **K. A. Johnson,** CMB-11, secretary; and F. L. Cochran of Gulf General Atomics, vice president.

Mrs. Grace G. Cole, T-3, plans to retire during the month of November, after more than twelve years with the Laboratory. She and her husband, Oliver, who retired last year, expect to do extensive traveling in the future, but will continue to reside in Los Alamos.

Fred Schonfeld, CMF-5 group leader, has accepted an invitation to serve as a member of the Nuclear Metallurgy Committee of the American Institute of Mining, Metallurgical and Petroleum Engineers.

One of the committee's functions is to organize technical sessions and cooperate with other national organizations working in this or collateral fields.

A former consultant on thermonuclear weapon development at the Los Alamos Scientific Laboratory, **John Archibald Wheeler** of Princeton University, has been selected by the Atomic Energy Commission to receive the Enrico Fermi Award for 1968.

Wheeler was a consultant at the Laboratory from March 1950 to June 1951. He then returned to Princeton where he was director of a group which worked on thermonuclear problems under a subcontract from LASL until 1953.

The award which consists of $25,000, a gold medal and a citation, is named after Enrico Fermi, leader of a group of scientists who achieved the first sustained controlled nuclear chain reaction Dec. 2, 1942.

Wheeler will become the 12th recipient of the award at a special ceremony Dec. 2, the 26th anniversary of Fermi's achievement. Location of the ceremony will be determined later.

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The Technical Side

Presentation at Meeting on Solid-State Devices, sponsored by IPPS and IEEE, Manchester, England, Sept. 3-6:

"Semi-Conductor Detectors for Use in the Current Mode" by A. Moat and D. G. Piper, AWRE, England, and M. G. Silbert, P-DOR

Presentation at International Symposium on the Physics of the Magnetosphere, Washington, D.C., Sept. 3-13:

"Observations of Plasma Flow in the Earth's Magnetosheath" by A. J. Hundhausen, T-12, J. R. Asbridge, S. J. Bame, H. E. Gilbert, and I. B. Strong, all P-4

"Preliminary Results from Auroral Conjugate Flights Between L = 3 and L = 15 During March 1968" by A. E. Belon and T. N. Davis, both Geophysical Institute of the University of Alaska, and N. W. Glass, J-16

"Substorm-Related Disturbances in the Plasma Sheet of the Geomagnetic Tail" by E. W. Hones, Jr. P-4

Presentations at Meetings of the Bernalillo County Medical Association, Albuquerque, Sept. 5 and the Blue Grass Chapter of the Health Physics Society, Jenny Wiley State Park, Kentucky, Sept. 7 (Invited Talks):

"The Problem of Large Area Contamination with Radioactive Materials" by W. H. Langham, H-4

Presentation at 156th National American Chemical Society Meeting, Atlantic City, N. J., Sept. 8-13:

"Electrophoretic Heterogeneity of Chicken Phosvitin on Polyacrylamide Gel Electrophoresis" by W. F. Zapisek and C. H. Blomquist, both H-4

"^{19} NMR Studies of Metal-Fluoride Complexes, Mixed Complexes of the Type $(SNF_xCl_{6-x})^{2-}$ In Aqueous HF" by M. J. Reisfeld, N. A. Matwiyoff, and W. E. Wageman, all CMF-4

"Reactivity of Hydroxyl Radicals with Saturated Hydrocarbons" by N. R. Greiner, GMX-2

Presentation at meeting of Japan Atomic Energy Society, Tokyo, Japan, Sept. 9-12:

"Recent Activities in the Rover Program" by J. D. Orndoff, N-2

Presentation at Vienna Panel to assess the knowledge of the Plutonium-Carbide and Uranium-Carbide Systems, Vienna, Austria, Sept. 9-13:

"A Report to the Vienna Panel (1968)—The Uranium-Carbon and Plutonium-Carbon Systems" by E. K. Storms, CMB-3

Symposium on Physics of Ice, Munich, Germany, Sept. 9-14:

"Structural Studies of Ice Polymorphs by Neutron Diffraction, Proton and Deuteron Nuclear Magnetic Resonances" by S. W. Rabideau and E. D. Finch, both CMF-2

Presentation at International Conference on Statistical Mechanics, Kyoto Kaikan, Kyoto, Japan, Sept. 1-14:

"Energy Transport in the Disordered Harmonic Chain and the Correl-

short subjects

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Permits for firewood, Christmas trees, aspen poles and transplants from Atomic Energy Commission land at Los Alamos are now issued by the Forest Service located in the basement of the AEC headquarters building.

In the past, permits have been issued by Zia Company. The change in procedure, in effect since Oct. 1, is part of the long-range plan to consolidate all activities associated with the conservation of renewable natural resources in one location.

Howard B. Demuth, K-5, is on Professional Research and Teaching Leave at the University of Hawaii in Honolulu where he is teaching part-time in the Electrical Engineering Department and doing research on control and system theory.

His leave was effective Sept. 20 for approximately one year.

A full-scale model of the NERVA nuclear rocket engine is featured in the 4,000-square-foot Atomic Energy Commission exhibit in Mexico City.

The 24-foot, 3,000-pound model and other items in the AEC's exhibit, entitled "A New Abundance of Energy," is a part of the XIXth Olympiad cultural program and will be on display through Nov. 30.

The exhibit is a non-technical depiction of the benefits to be realized from peaceful applications of nuclear science and technology.

Stanislaw M. Ulam, Laboratory consultant and former staff member, who now heads the Mathematics Department at the University of Colorado, Boulder, will be one of six panelists at the fifth annual Science, Philosophy and Religion Symposium at the Weapons Laboratory of Kirtland Air Force Base in Albuquerque Nov. 13-15.

Each member of the panel will present his views on "Weapons Technology-Conscience" and then lead several discussion groups.

the technical side . . .

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ation-Function Formula" by M. Rich and W. M. Visscher, both T-9

Presentation at Second American Electromagnetic Isotope Separator Symposium, Los Alamos, Sept. 11-13:

"Preparation of a 20-Microgram Deposit of 6.75-Day Uranium-237" by B. J. Dropesky, K. Wolfsberg, and J. W. Barnes, all J-11

Presentation at Symposium International sur le Calcul Analogique et Hybride Applique a l'Energie Nucleaire, Saclay, France, Sept. 16-18:

"Use of Hybride Simulation Techniques in the Nuclear Rocket Propulsion Program" by H. S. Murray, T. E. Springer, C. P. Milich, and J. D. Balcomb, all N-4

Presentation at Lions Club, Los Alamos, Sept. 18:

"LASL in Vietnam" by R. W. Freyman, P-1

Presentation at Ninth Meeting of the Filament Winding Working Group, AEC Integrated Contractors Working Group at SLL, Livermore, Calif., Sept. 18-19:

"Epoxy Resin Systems and Winding Conditions for Filament on Explosives" by W. A. May, GMX-3

Presentation at Symposium on Thermal Expansion of Solids, Gaithersburg, Maryland, Sept. 18-20:

"Thermal Expansion Measurement with High-Temperature Neutron Diffraction" by A. L. Bowman and N. H. Krikorian, CMB-3, G. P. Arnold and N. G. Nereson, P-2

Presentations at Conference on Numerical Simulation of Plasma, Los Alamos, Sept. 18-20:

"Early Results from a Two Dimensional Drift Equation Simulation" by D. S. DeYoung, J-10

"MHD Simulation of Co-Axial Plasma Flow" by T. D. Butler and J. L. Cook, T-3, and R. L. Morse, P-18

"Numerical Simulation of Warm Two-Beam Plasma" by R. L. Morse and C. W. Nielson, both P-18

"Numerical Investigation of the Two-Stream Instability Via Hamilton's Principle" by H. R. Lewis, P-18, and K. J. Melendez, C-4

"Numerical Simulation of Axi-Symmetric, Collisionless, Finite Beta Plasma" by D. O. Dickman, C-4, R. L. Morse and C. W. Nielson, both P-18

"Persistently Recurring Nonlinear Waves Arising from the Two Stream Instability" by T. F. Armstrong, University of Kansas, and J. P. Friedberg, P-18

"Two Dimensional Simulation of Shock Waves in Collisionless Plasmas" by C. R. Shonk, J-10, and R. L. Morse, P-18

Presentation at Tennessee Valley Industrial Health Conference, Gatlinburg, Tenn., Sept. 19-20:

"Biochemical Assay in Industrial Hygiene and Health Physics" by H. F. Schulte, H-5

Presentations at Colloquiums at the University of Kansas, Lawrence, Sept. 23 and Kansas State University ,Manhattan, Sept. 24:

"The Los Alamos Meson Factory—A New Approach to Old Problems" by D. E. Nagle, MP-4

Presentation at Lawrence Radiation Laboratory Symposium on Arrays of Fissile Material and Interaction, Livermore, Calif., Sept. 23-25:

"Density-Analog Techniques" by H. C. Paxton, N-2

Presentation at Symposium on Nondestructive Testing in the Field of Nuclear Technology, Savannah River Plant, Aiken, S.C., Sept. 24-26:

"The Analysis of Complex Gamma Ray Spectra by Deconvolution Techniques" by R. A. Morris, GMX-1

"Instrumental Determination of Hydrogen Content in Neutron Moderating Material" by D. A. Garrett, GMX-1

"Mass Per Unit Length Evaluation of Reactor Fuel Elements" by H. J. Fullbright, III, GMX-1

"The On-Line Application of Electronic Calculators to Nondestructive Testing Systems" by H. J. Fullbright, III, GMX-1

"Today's International Status of the Nondestructive Testing Profession" by G. H. Tenney, Dir. Off.

Presentation at Colloquium, Department of Physics, University of Illinois, Urbana, Ill., Sept. 26:

"Electron Microscopy of the Protein, Collagen" by J. H. Manley, Dir. Off.

"Handling of Cryogenic Fluids" by F. J. Edeskuty, CMF-9

Presentation at meeting of the Rocky Mountain Section, American Industrial Hygiene Association and Colorado Health Physics Society local section, Denver, Colo., Sept. 27-28:

"Criticality Accident Dosimetry" by D. E. Hankins, H-1

"Determination of Pb, Cd, and Fe; A Survey of Concentration by Alkaline Earth Phosphate Precipitation and Analysis by Atomic Absorption Spectroscopy" by Patricia C. Stein, H-5

"Flameless Catalytic Heaters" by D. Bevis, R. Mitchell, and E. Campbell, all H-5

"Regulation Changes Governing the Shipment of Radioactive Material" by C. W. Buckland, Jr., H-1

"Response of Some Alpha Survey Monitoring Instruments Versus Distance from the Source" by H. W. Craig, H-1

Presentation at Meeting of the Rio Grande Chapter of Health Physics Society, Lovelace Clinic, Albuquerque, Oct. 4:

"Regulation Changes Governing the Shipment of Radioactive Materials" by C. W. Buckland, Jr., H-1

"Response of Some Alpha Survey Monitoring Instruments versus Distance from the Source" by H. W. Craig, H-1

Presentation at New York State Sectional Meeting of the American Physical Society on the Development of Neutron Physics in the Last Century, Albany, N.Y., Oct. 4:

"The Future of Neutron Physics with Nuclear Explosions" by A. Hemmendinger, W-8

Presentation at American Physical Society Meeting, Hanover, N.H., Oct. 5-6:

"Cooling of ^{3}He Using Enhanced Magnetism" by W. A. Steyert, M. D. Daybell, M. P. Maley, and W. P. Pratt, all CMF-9

new hires

C Division

Lucy Lockman Booth, Los Alamos, C-1 (Part Time)
Katherine Louise Camp, Los Alamos, C-1 (Part Time)
Charles D. Engelke, Salt Lake City, Utah, C-1
Barbara Theresa Gritsko, Los Alamos, C-1 (Part Time)
Wilbur Allan Korte, Los Alamos, C-1
Ruth Juanita Newcom, Los Alamos, C-1, (Part Time)
David Lee Rourke, Los Alamos, C-1
Thelma Dominguez Segura, Los Alamos, C-1 (Part Time—Rehire)
Jennie Lee Boring, Los Alamos, C-2
Ronald John Krantz, Redlands, Calif, C-2
Dorothy Jean Salazar, Los Alamos, C-2
John Russell Sopka, Boulder, Colo., C-4
David Kenneth Kahaner, New York City, N.Y., C-6
John Albert Brockmeyer, Jr., St. Louis, Mo., C-7

CMB Division

Daniel Philip Foshee, Los Alamos, CMB-3 (Rehire)
Marlene Anna Harper, Los Alamos, CMB-6 (Part Time)
Dorval Dale Jeffries, Las Vegas, Nev., CMB-14

CMF Division

Michael Paul Eastman, Lancaster, Wisc., CMF-2 (Postdoctoral)
James Francis O'Brien, Philadelphia, Pa., CMF-2 (Postdoctoral)
Siegfried Stephen Hecker, Cleveland, Ohio, CMF-5 (Postdoctoral—Rehire)
Jerome J. Miller, Los Alamos, CMF-9 (Casual Rehire)
Joe Julio Medina, Pullman, Wash., CMF-13

D Division

Marjorie Ann Hall, Espanola, D-2
Leona K. Nash, Los Alamos, D-2 (Casual—Rehire)

Engineering Department

Richard C. Bagley, Los Alamos, Eng-5 (Casual)
Joe D. Golden, Los Alamos, Eng-5 (Casual—Rehire)

GMX Division

Ernesto Joe Garcia, Penasco, GMX-2
Richard Vance Browning, Albuquerque, GMX-3
James Wesley Owens, Brigham City, Utah, GMX-3
Jose O. Rodriquez, Dixon, GMX-3
Violet M. Rarrick, Los Alamos, GMX-7 (Casual—Rehire)
James Wade Ferguson, Los Alamos, GMX-11
John Richard Hartmann, Albuquerque, GMX-11 (Rehire)
Mildred Carol McDonaugh, Los Alamos, GMX-11 (Part Time—Rehire)
Jack Pickett, Los Alamos, GMX-11

H Division

Alice J. Lawrence, Los Alamos, H-DO (Casual)
George Joseph Kantor, Titusville, Pa., H-4 (Postdoctoral)
Annie Sarah Thomas, Marshall, Texas, H-4 (Research Asst.)

J Division

Judith A. Roebuck, Los Alamos, J-1 (Casual—Rehire)
Edmond Joseph Pierczynski, Mt. Charleston, Nev., J-17 (NTS)

K Division

Thomas Edwin Walsh, Youngstown, Ohio, K-4
Michael Louis Trombetta, New York City, N.Y., K-5

MP Division

Jimmy Day Burton, Richardson, Texas, MP-3
Edward Dennis Theriot, Jr., Baton Rouge, La., MP-4 (Postdoctoral)

Mail and Records

Roy E. Gallegos, Santa Fe
Leroy Cipriano Padilla, Fairview

N Division

Merlyn Stewart Krick, Shillington, Pa., N-6
Joerg Hannes Menzel, Trenton, N.J., N-6
Stephen Eric Ziemniak, Rochester, N.Y., N-7 (Postdoctoral)

P Division

Edward Joseph Zivica, Charleston, S.C., P-2
George Frederick Auchampaugh, Livermore, Calif., P-3
Michael Sands Kelly, Las Vegas, Nev., P-17

Personnel Department

Barbara A. Marx, Los Alamos, Per-1 (Casual—Rehire)
Sharon Ann O'Keefe, Santa Fe, Per-1 (Casual)
Rose A. Vigil, Los Alamos, Per-4

Shops Department

Ralph Albert Bassett, Albuquerque, SD-DO
Emmanuel K. Spanos, Chicago, Ill., SD-1
Tony B. Vigil, Santa Fe, SD-1

Supply and Property Department

Janis F. Builta, Los Alamos, SP-DO (Casual—Rehire)
Elizabeth S. Romero, Santa Fe, SP-DO (Casual—Rehire)
Eliza Ursuleta Roybal, Hernandez, SP-10
Patricia Ellen Foshee, Los Alamos, SP-11 (Rehire)
Virgie La Vaughan Lundgaard, Los Alamos, SP-12 (Rehire)

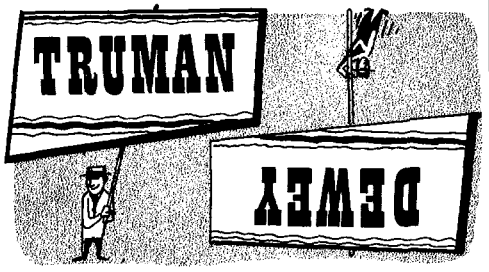
T Division

Edmund Oliver Fiset, Seattle, Wash., T-9 (Postdoctoral)

W Division

Ronald Shane Dingus, Appleton City, Mo., W-8

20 years ago in los alamos



Culled from the 1948 files of the Santa Fe New Mexican by Robert Porton

Political Headlines
November 1, 1948: "Dewey seen as sure winner"
November 3, 1948: "President Harry S. Truman won a four-year term in his own right today and pledged himself to devote it to seeking 'Peace in the World' and 'Prosperity and Happiness at Home'." In an astounding upset of pre-election forecasts, Mr. Truman's campaign not only retained the presidency for him, but led the Democratic party to a sweeping overturn of Republican control in Congress. A small number of Los Alamos residents, 407 of the 425 eligible to vote, went to the polls here yesterday and, in line with the national trend, gave President Truman 208 votes to Governor Dewey's 178.

Local Veterans Get Medals
A number of persons were awarded United States Navy Medals earned during World War II at a meeting of Naval Unit 11-7 in the community council chambers this week. Lieutenant Commander Richard A. Plank, USNR, of the 11th District, officiated. Among those receiving the citations were Robert H. Campbell, Leonard F. O'Connor, Ralph N. Bunch, Charles Princell, Jesse T. Rose, James R. Ditto, Manuel D. Diaz, William R. Kennedy, Jr. and C. Craig Hosmer.

New Post Office Opens
Postmaster Ismael Trujillo and the Los Alamos Post Office staff are scheduled to change locations this weekend. In moving, the Hill postal system will go from an Army barracks into one of the most modern establishments in the state. With completely new working conditions, the building will allow the service to be expanded and improved.

Anderson Pays Visit to Hill
Clinton P. Anderson, U.S. senator-elect to fill the unexpired term of Carl Hatch, was in Los Alamos today. He was met at the airport by AEC officials headed by Carroll Tyler, project manager. Anderson pointed out that prior to his election, he had advised the League of Women Voters of his support in clearing up the jurisdictional question brought about by a recent court decision. "I simply wanted to be sure that I understood what the people of Los Alamos want me to do, and how I can do it before accepting my new office," he said.

"The Atom" Wins Excellence Award

"The Atom," house organ of the Los Alamos Scientific Laboratory, has won an "Award for Excellence" in the Pacific Industrial Communicators Association 1968 Evaluation and Awards Program.

The three editions entered by the Laboratory had different editors. The February edition was by Virginia Lees, former editor; March (25th anniversary issue) by Bill Regan, Pub-1 group leader; and April by Ken Johnson, the current editor.

what's doing

MESA PUBLIC LIBRARY EXHIBITS:
Through month of November—watercolors and oils by Agnes Tait.

Nov. 6 through Dec. 4—Pottery by Karen Hack.

PUBLIC SWIMMING: High School Pool—Monday through Wednesday, 7:30 p.m. to 9:30 p.m., open swimming; Saturday and Sunday, 1 p.m. to 6 p.m., open swimming; Sunday from 7 p.m. to 9 p.m., Adult Swim Club.

LOS ALAMOS CONCERT ASSOCIATION: Concert, Thursday, Nov. 14, 8:15 p.m., Civic Auditorium; Daniel Domb, Israeli celloist. For information call Mrs. Henry Filip, 2-2135.

NEWCOMERS CLUB: Meeting, Nov. 20, 7:30 p.m., Recreation Hall; game night and election of officers. For information call Mrs. Anita Schamaun, 2-5392.

OUTDOOR ASSOCIATION: No charge; open to the public. Contact leader for information about specific hikes.

Nov. 3—Valle Ridge Trail, Ken Ewing, leader, 8-4488.

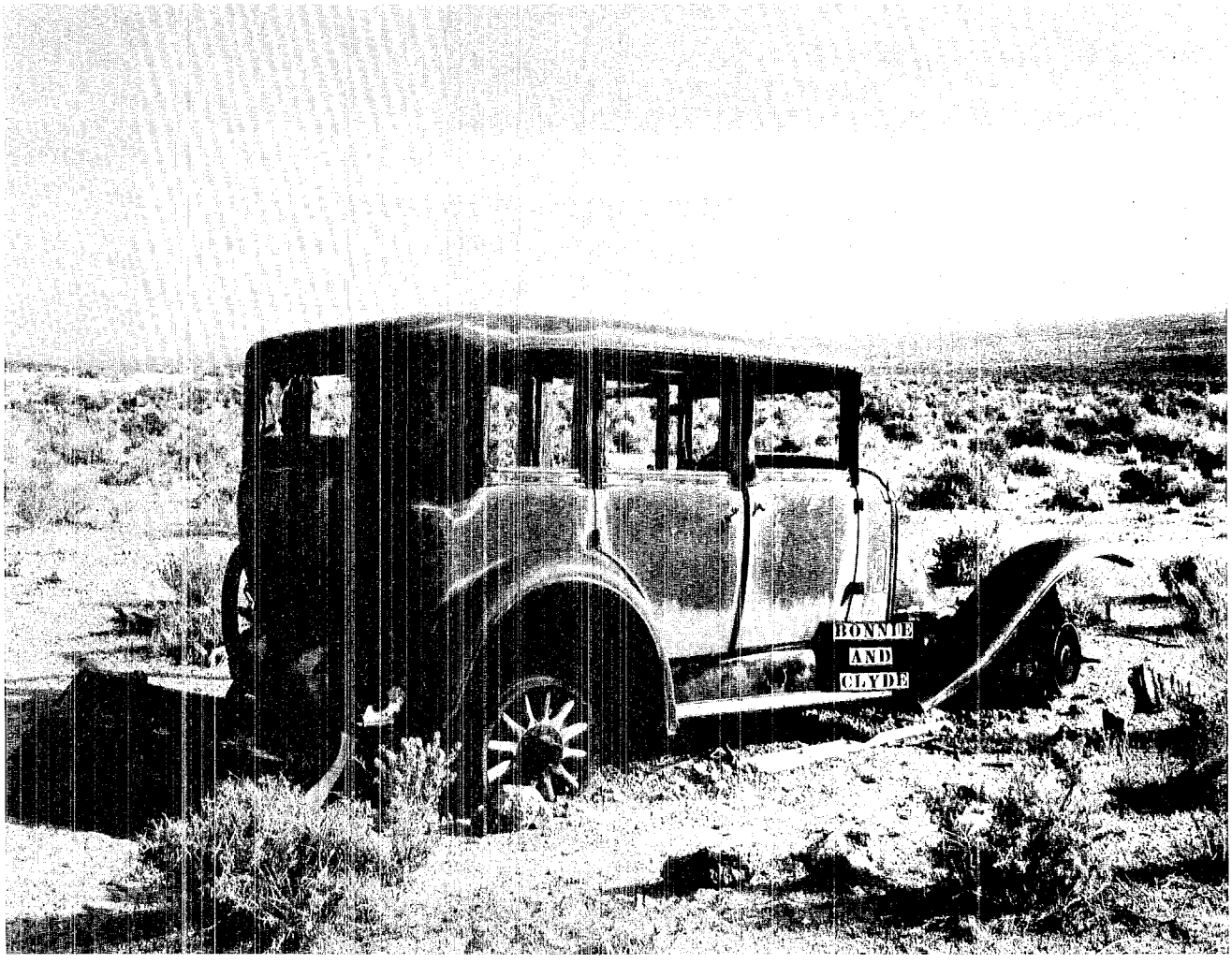
Nov. 10—Cerro Ricacho, Norris Nereson, leader, 2-3856.

Nov. 16—State Road 4 to Rancho Canada, Reed Elliott, leader, 2-4515.

Nov. 23—Along the Rio Grande, Betty Perkins, leader, 8-4916.

LOS ALAMOS LIGHT OPERA: Mail-order tickets on sale for Dec. 6, 7, 13 and 14 performances of Kern's and Hammerstein's "Showboat." Forward self-addressed, stamped envelope and check to: Los Alamos Light Opera, P.O. Box 353. Civic Auditorium box office open starting Nov. 18, 7 to 9 p.m. Prices: $2 and $3. All seats reserved.

SIERRA CLUB: Luncheon meeting at noon, first Tuesday of each month, South Mesa Cafeteria.



Enriques F. Ortega, D-8, jokingly put the "Bonnie and Clyde" sign on the remains of an old car at White Rock Springs at the Nevada Test Site while on a two-week trip with Fred Worman, H-DO, who was gathering information for an archeological report on NTS. "The car was probably left behind by some old rancher who lived there during the '20s," Worman said.

EDWARD GROTHUS
208 ANDANADA
LOS ALAMOS, NEW MEXICO 87544